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UPOV

INTERNATIONAL UNION FOR THE PROTECTION OF NEW VARIETIES OF PLANTS

GENEVA

DRAFT

PECAN NUT

UPOV Code: CARYA_ILL

Carya illinoinensis (Wangenh.) K.Koch [*]

GUIDELINES

FOR THE CONDUCT OF TESTS

FOR DISTINCTNESS, UNIFORMITY AND STABILITY

prepared by an expert from Argentina

to be considered by the Technical Working Party for Fruit Crops at its thirty-eighth session, to be held in Jeju, Republic of Korea, from July 9 to 13, 2007

Alternative Names:[*]

Botanical name	*English*	*French*	*German*	*Spanish*
Carya illinoinensis (Wangenh.) K. Koch	Pecan nut	Pacanier	Pekan, Pekannuß	Nuez pecán, Pecan, Nogal Pacanero

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 *Carya illinoinensis* (Wangenh.) K. Koch. of the family *Juglandaceae*.

2. Material Required

2.1 The competent authorities decide on the quantity and quality of the plant material required for testing the variety and when and where it is to be delivered. Applicants submitting material from a State other than that in which the testing takes place must ensure that all customs formalities and phytosanitary requirements are complied with.

2.2 The material is to be supplied in the form of dormant budstick (15 cm long and 1-1.5 cm in diameter with 3 groups of buds) to be sent at grafting time.

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

10 dormant budstick.

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

The minimum duration of tests should normally be two independent 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. In particular, it is essential that the trees produce a satisfactory crop of fruit in each of the two growing cycles.

3.3.2 Type of observation

The recommended method of observing the characteristic is indicated by the following key in the second column of the Table 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.

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 Number of trees / Parts of trees to be Examined

Unless otherwise indicated, all observations should be made on 5 trees or parts taken from each of 5 trees. In the case of parts of trees, the number to be taken from each of the trees should be 2.

3.6 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.

4.2 Uniformity

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

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

4.3 Stability

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

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

5. Grouping of Varieties and Organization of the Growing Trial

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

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

5.3 The following have been agreed as useful grouping characteristics:

(a) Nut: length (characteristic 21)
(b) Nut: width in lateral view (characteristic 22)
(c) Nut: width in ventral view (characteristic 23)

5.4 Guidance for the use of grouping characteristics, in the process of examining distinctness, is provided through the General Introduction.

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

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.

6.3 Types of Expression

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

6.4 Example Varieties

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

6.5 Legend

(*) Asterisked characteristic – see Chapter 6.1.2

QL: Qualitative characteristic – see Chapter 6.3
QN: Quantitative characteristic – see Chapter 6.3
PQ: Pseudo-qualitative characteristic – see Chapter 6.3
(+) See Explanations on the Table of Characteristics in Chapter 8.2

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

	English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
1.	**Tree: vigor**	**Arbre: vigueur**	**Baum: Wuchsstarke**	**Arbol: vigor**		
QN	weak	faible	gering	debil		3
	medium	moyenne	mittel	medio		5
	strong	forte	stark	fuerte		7
2.	**Tree: density of crown**	**Arbre: densité de la courone**	**Baum: kronendichte**	**Arbol: densidad de la copa**		
QN	sparse	faible	locker	laxa		3
	medium	moyenne	mittel	media		5
	dense	dense	dicht	densa		7
3. **(+)**	**Tree: attitude of branches**			**Arbol: actitud de las ramas**		
PQ	erect	dressé	aufrecht	erecto		1
	semi-erect	demi-dressé	halbaufrecht	semierecto		2
	horizontal			horizontal		3
4.	**One year old shoot: color**			**Rama de un ano: color**		
PQ	greenish brown			castano verdoso		1
	brown			castano		2
	reddish brown			castano rojizo		3
5.	**One year old shoot: intensity of color**			**Rama de un ano: intensidad del color**		
QN	light			claro		3
	medium			medio		5
	dark			oscuro		7

		English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
6.		**Leaf: intensity of green color**			**Hoja: intensidad del color verde**		
QN	**(a)**	light			claro		3
		medium			medio		5
		dark			oscuro		7
7. **(+)**		**Leaf: length of terminal leaflet**			**Hoja: longitude del foliolo terminal**		
QN	**(a)**	short			corta		3
		medium			media		5
		long			larga		7
8. **(+)**		**Leaf: width of terminal leaflet**			**Hoja: ancho del foliolo terminal**		
QN	**(a)**	narrow			angosto		3
		medium			medio		5
		broad			ancho		7
9. **(+)**		**Leaf: ratio length/width of terminal leaflet**			**Hoja: relacion largo/ancho del foliolo terminal**		
QN	**(a)**	small	faible	klein	pequena		3
		medium	moyen	mittel	media		5
		large	élevé	grob	grande		7
10. **(+)**		**Leaf: length of petiole**			**Hoja: largo del peciolo**		
QN	**(a)**	short			corto		3
		medium			medio		5
		long			largo		7

		English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
11. **(+)**		**Lateral leaflet: curvature of longitudinal axis**			**Foliolo lateral: curvature del eje longitudinal**		
QN	**(a)**	weak			débil		3
		medium			media		5
		strong			fuerte		7
12. **(+)**		**Lateral leaflet: presence of petiolule**			**Foliolo lateral: presencia de peciolo**		
QL	**(a)**	absent			ausente		1
		present			presente		9
13. **(+)**		**Lateral leaflet: asymmetry**			**Foliolo lateral: asimetria**		
QN	**(a)**	absent or very weak			ausente o muy débil		1
		weak			débil		3
		medium			media		5
		strong			fuerte		7
14. **(+)**		**Only varieties with asymmetric lateral leaflets: lateral leaflet: position of loner side of leaflet**			**Solo variedades con foliolos laterals asimetricos: Foliolo lateral: posicion del lado mas largo de los foliolos**		
QL	**(a)**	towards apex of leaf			hacia el eje de la hoja		1
		towards base of leaf			hacia la base de la hoja		2
15.		**Catkin: length**			**Amento: largo**		
QN		short			corto		3
		medium			medio		5
		long			largo		7

	English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
16.	**Female inflorescence: predominant number of flowers**			**Inflorescencia femenina: numero predominante de flores**		
PQ	three			tres		1
	four			cuatro		2
	five			cinco		3
	six			seis		4
	seven			siete		5
17.	**Stigma: type**			**Estigma: tipo**		
(+)						
QL	entire			entero		1
	bifurcate			bifido		2
18. **(*)**	**Stigma: color**			**Estigma: color**		
QL	greenish			verdoso		1
	reddish			rojizo		2
19.	**Husk: intensity of green color**			**Vaina: intensidad del color verde**		
QN	light			claro		3
	medium			medio		5
	dark			oscuro		7
20.	**Husk: prominence of ribs**			**Vaina: prominencia de costillas**		
	absent or very weak			ausente o muy débil		1
	weak			débil		3
	medium			media		5
	strong			fuerte		7

	English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
21. (*) (+)	**Nut: length**			**Nuez: largo**		
QN	short			corto	Success, Desirable	3
	medium			medio	Harris Super	5
	long			largo	Mahan	7
22. (*) (+)	**Nut: width in lateral view**			**Nuez: ancho en vista lateral**		
QN	narrow			angosto	Mahan, Kernoodle	3
	medium			medio	Stuart	5
	broad			ancho	Shoshoni	7
23. (*) (+)	**Nut: width in ventral view**					
QN	narrow			angosto	Mahan,	3
	medium			medio	Stuart	5
	broad			ancho	Shoshoni	7
24. (+)	**Nut: shape in ventral view**			**Nuez: forma en vista ventral**		
PQ	circular			circular		1
	elliptic			eliptico		2
	oblong			oblongo	Harris Super, Mahan	3
	obovate			obovado		4
	ovate			ovate		5

	English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
25. **(+)**	**Nut: shape in lateral view**			**Nuez: for a en vista lateral**		
PQ	circular			circular		1
	elliptic			eliptico		2
	oblong			oblongo	Mahan, Harris Super	3
	obovate			obovado		4
	ovate			ovate		5
26. **(+)**	**Nut: shape in cross section with suture in vertical position**			**Nuez: forma en seccion transfersal con la sutura en posicion vertical**		
PQ	elliptic			eliptico	Kernoodle	1
	circular			circular	Desirable, Shoshoni	2
	oblate			Comprimido/ aplanado	Mahan	3
27. **(+)**	**Nut: shape of apex in lateral view**			**Nuez: forma del apice en vista lateral**		
PQ	acute			agudo		1
	obtuse			obtuso		2
	rounded			redondeado		3
27.a	**Nut: length of apical point**			**Nuez: longitude del punto apical**		
QN	short			corto		3
	medium			medio		5
	long			largo		7
27.b	**Nut: length of basal point**			**Nuez: longitude del punto basal**		
QN	short			corto		3
	medium			medio		5
	long			largo		7

	English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
28.	**Nut: intensity of ground color of shell**			**Nuez: intensidad del color de fondo de la cascara**		
QN	light			claro	Success, Mahan, Desirable	3
	medium			medio	Harris Super, Stuart	5
	dark			oscuro	Shoshoni, Kernoodle	7
29.	**Nut: area covered by spots**			**Nuez: area cubierta con manchas**		
QN	small			pequena	Shoshoni, Harris Super	3
	medium			media	Desirable, Kernoodle, Mahan	5
	large			grande	Stuart	7
30.	**Nut thickness of shell**			**Nuez: grosor de la cascara**		
QN	thin			delgado		3
	medium			medio		5
	thick			grueso		7
31.	**Nut: thickness of partition of wall**			**Nuez: grosor del tabique central**		
QN	thin			delgado		3
	medium			medio		5
	thick			grueso		7
32.	**Kernel: adherence to shell**			**Semilla: adherencia a la cascara**		
QN	weak			débil		3
	medium			media		5
	strong			fuerte		7

	English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
33.	**Kernel: weight**			**Semilla: adherencia a la cascara**		
QN	light			débil		
	medium			media		
	heavy			fuerte		
34.	**Nut: ratio weight of nut/weight of kernel**			**Nuez: relacion peso de la nuez/peso de la semilla**		
QN	low			bajo		3
	medium			media		5
	high			alto		7
35.	**Kernel: intensity of color**			**Semilla: intensidad del color**		
QN	light			claro		3
	medium			medio		5
	dark			oscuro		7
36.	**Time of leaf bud burst**			**Epoca de Brotacion**		
QN	early			temprana		3
	medium			media		5
	late			tardia		7
37.	**Time of leaf fall**			**Epoca de defoliacion**		
QN	early			temprana		3
	medium			media		5
	late			tardia		7
38.	**Persistence of rachis on tree**			**Persistencia del raquis en el arbol**		
QL	absent			ausente		1
	present			presente		9

	English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
39. **(+)**	**Time of beginning of receptivity of stigma**			**Epoca de comienzo de la receptividad del estigma**		
QN	early			temprana	Shoshoni	3
	medium			media	Mahan, Desirable	5
	late			tardia	Caddo, Oklahoma	7
40.	**Time of beginning of anther dehiscence**			**Epoca de comienzo de la dehiscencia de las antera**		
QN	early			temprana		3
	medium			media		5
	late			tardia		7
41.	**Time of maturity for harvest**			**Epoca de madurez para cosecha**		
QN	early			temprana		3
	medium			media		5
	late			tardia		7
42.	**Tree: persistence of husk after nut fall**	**Arbre: persistence du brou après la chute de la noix**		**Arbol: persistencia de la vaina luego de la cida de la nuez**		
QN	not persistent	non persistant	nicht anhanftend	no persistente		1
	partially persistent	partialement persistant	teilweise anhanftend	parcilmente persistent		2
	fully persistent	totalement persistant	vollstandig anhaftend	completamente persistente		3

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:

Ad. 6 to 14: Phenological state (V9) – end of leaflet expansion – fully developed leaflets. Leafs on the middle section of a year shoot

Ad. 17 to 18: Phenological state (R6) – fully receptivity of stigma – Stigma is turgescent with brillant aspect. Observation must be done on the terminal section of a year shoot.

Ad. 21 to 25: Phenological state (R14) – husk opening - 24 weeks after pollination. Full development of nut. Observation must be done on the terminal section of a year shoot.

8.2 Explanations for individual characteristics

Ad. 1: Tree: vigor

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

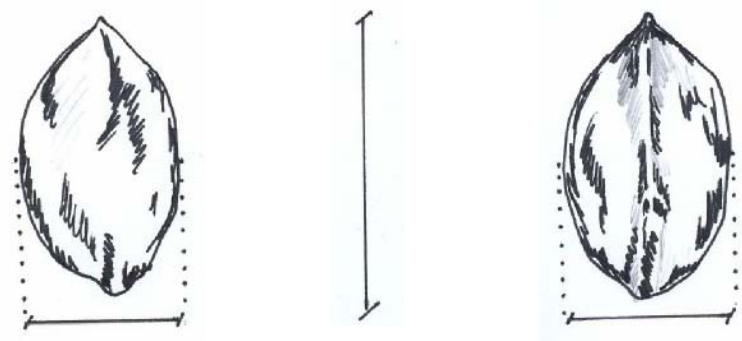
Ad. 3: Tree: attitude of branches

1. erect | 2. semi erect | 3. spreading

Ad. 7-14: Leaf, leaflet

To observe on fully developed leaves on the middle third of branches

Ad. 21: Nut: length and width

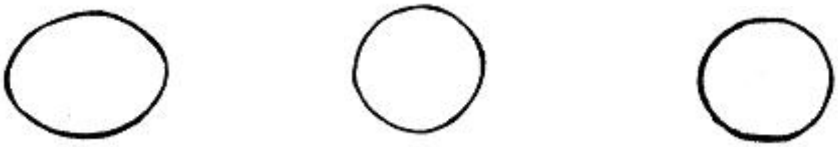


Width Length Width

Ad. 24: Nut: shape in ventral view

2. elliptic 3. oblong 4. obovate

Ad. 26: Nut: shape in cross section with suture in vertical position



1. elliptic 2. circular 3. oblate

Ad. 27: Nut: shape of apex in lateral view

1. acute 3. rounded

Characteristic 13: Asymmetry of lateral leaflet

1
absent

2
medium

3
strong

Characteristic 17: Stigma

1
entire

2
bifurcate

9. Literature

Aldred, W.H., et al, 1997: Texas Pecan Handbook. Texas Agricultural Extension Service (Texas A&M University) Texas, US, pp. 305.

Frusso, E., 1997: Aspectos del cultivo del nogal pecan, Estación Experimental Agropecuaria INTA Delta del Paraná (INTA), Buenos Aires, AR, pp. 10.

INSTITUTO NACIONAL DE SEMILLAS (INASE), 2004: Descriptor morfológico, fisiológico, fenológico, para el Registro y protección de cultivares de *PECAN (Carya illinoinensis* (Wangenh.) K. Koch), Buenos Aires, AR, pp. 11.

Grauke, L.J., 1985: The Scientific Name of the Pecan. HortScience 20: 629-630.

Grauke, L.J., Thompson, T.,1992: Patterns of pollination in pecans. Proc. Texas Pecan Growers 71: 41-49.

Grauke, L.J., Thompson, T.,1996: Pecan and hickories, Fruit breeding.vol III , New York,US, pp 185-239.

Goff, W.D., Mc Vay J.R., Gazaway, W.S., 1996: Pecan: Production in the southeast – A guide for growers. Alabama Cooperative Extension System (Auburn University) Alabama, US, pp. 222.

Madero E., Frusso E., 2002: Desarrollo del Cultivo de la Nuez Pecan en la Argentina, Estación Experimental Agropecuaria INTA Delta del Paraná (INTA), Buenos Aires, AR, pp. 32.

Madero E., Frusso E., Cajaravilla P., 1997: La nuez pecan, Estación Experimental Agropecuaria INTA Delta del Paraná (INTA), Buenos Aires, AR, pp. 16.

Thompson T. E., y Young F., Pecan Cultivars- Past and Present.

Wesley Rice, G. ,1994: Pecans: popular varieties, propagation, culture & more, PecanQuest Publications, Ponca City, Oklahoma, US, pp.168.

Worley,R. E. Compendium of Pecan Production and Research. Ann Arbor, Michigan US, pp.479.

Wood, B. W., 1996: Canopy Morphology of Pecan Cultivars. HortScience 31: 139-142.

Wood, B. W., Smith, M.W., Worley, R.E., Anderson, P.C., Thompson, T.T., Grauke, L.J., 1997: HortScience 32: 1028-1033.

Worley R. E., Mullinixy B. G. Pecan cultivar performance at the coastal plain experiment station 1921-1994. 1997: The University of Georgia, Tifton, Georgia, US, pp 34

PECAN NUT: PHENOLOGICAL STAGES

V1: sleeping bud
V2: inflated bud
V3: external splited bud
V4: internal splited bud
V5: developing leaves
V6 – V9: developing leaflets
R1: catkin prolonging
R2: pollen liberation start.
R3: Pollen liberation fulness
R4: End of pollen liberation
R5: Stigma receptivity starts
R6: Stigma receptivity fulness
R7: End of stigma receptivity
R8: early nut development
R9: quick nut development
R10: late nut development
R11: starts the nut fill
R12: nut fill
R13: end of nut fill
R14: opening husk
S1: yellowing leaves starts
S2: fully yellowing leaves
S3: end of yellowing leaves
S4: start downfall leaves
S5: fully downfall leaves
S6: end of downfall leaves

INTA – EEA DELTA DEL PARANÁ
Ing. Enrique Frusso.

10. Technical Questionnaire

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

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

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

1. Subject of the Technical Questionnaire

1.1 Botanical name	*Carya illinoinensis* (Wangenh.) K Koch
1.2 Common name	Pecan Nut

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

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 (21)	**Nut: length**		
	short	Desirable, Success	3[ ]
	medium	Harris Super	5[ ]
	long	Mahan	7[ ]
5.2 (22)	**Nut: width in ventral view**		
	narrow	Mahan, Kernoodle	3[ ]
	medium	Stuart	5[ ]
	broad	Shoshoni	7[ ]

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

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	Characteristics	Example Varieties	Note
5.3 (23)	**Nut: width in lateral view**		
	narrow	Mahan	3[ ]
	medium	Stuart	5[ ]
	broad	Shoshoni	7[ ]

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			

Comments:

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

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

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

Yes [ ] No [ ]

(If yes, please provide details)

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

Yes [ ] No [ ]

(If yes, please provide details)

7.3 Other information

A representative color photograph of the variety should accompany the Technical Questionnaire.

8. Authorization for release

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

Yes [ ] No [ ]

(b) Has such authorization been obtained?

Yes [ ] No [ ]

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

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

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

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

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

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

(a) Microorganisms (e.g. virus, bacteria, phytoplasma) Yes [ ] No [ ]

(b) Chemical treatment (e.g. growth retardant, pesticide) Yes [ ] No [ ]

(c) Tissue culture Yes [ ] No [ ]

(d) Other factors Yes [ ] No [ ]

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

……

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

Applicant’s name

Signature Date

[End of document]