



TG/125/6

INTERNATIONAL UNION
FOR THE PROTECTION
OF NEW VARIETIES OF
PLANTS

UNION INTERNATIONALE
POUR LA PROTECTION
DES OBTENTIONS
VÉGÉTALES

INTERNATIONALER
VERBAND ZUM SCHUTZ
VON PFLANZEN-
ZÜCHTUNGEN

UNIÓN INTERNACIONAL
PARA LA PROTECCIÓN
DE LAS OBTENCIONES
VEGETALES

GUIDELINES
FOR THE CONDUCT OF TESTS
FOR DISTINCTNESS, UNIFORMITY AND STABILITY

WALNUT

(Juglans regia L.)

GENEVA
1999

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These Guidelines should be read in conjunction with document TG/1/2, which contains explanatory notes on the general principles on which the Guidelines have been established.

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I. Subject of these Guidelines

These Test Guidelines apply to all vegetatively propagated varieties of *Juglans regia* L. (Juglandaceae).

II. Material Required

1. The competent authorities decide when, where and in what quantity and quality the plant material required for testing the variety is to be delivered. Applicants submitting material from a State other than that in which the testing takes place must make sure that all customs formalities are complied with. As a minimum, the following quantity of plant material is recommended:

6 plants (one year after grafting) preferably on *Juglans regia* L.

If accepted by the competent authority, the applicant could submit:

- 8 dormant shoots for grafting, sufficient to propagate 15 trees (to be sent at grafting time) or
- 3 budsticks with sufficient buds to propagate 15 trees (to be sent at budding time).

2. The plant material supplied should be visibly healthy, not lacking in vigor or affected by any important pests or diseases, in particular the Cherry Leaf Roll Virus (CLRV). It should preferably not be obtained from *in vitro* propagation.

3. The plant material must not have undergone any treatment unless the competent authorities allow or request such treatment. If it has been treated, full details of the treatment must be given.

III. Conduct of Tests

1. To assess distinctness, it is essential for the plants under test to bear a satisfactory crop of fruit for at least two growing periods.

2. The tests should normally be conducted at one place. If any important characteristics of the variety cannot be seen at that place, the variety may be tested at an additional place.

3. The tests should be carried out under conditions ensuring normal growth. Each test should include a total of 6 trees. Separate plots for observation and for measuring can only be used if they have been subject to similar environmental conditions.

4. Additional tests for special purposes may be established.

IV. Methods and Observations

1. All observations should be made on 5 plants or 15 parts, 3 from each of 5 plants, with the exception of the observations on the nut and kernel, which should be made on at least 25 nuts.
2. For the assessment of uniformity a population standard of 1% with an acceptance probability of at least 95% should be applied. In the case of a sample size of 6 plants, the maximum number of off-types allowed would be 1.
3. All observations on the tree and the branch should be made in winter.
4. The persistence of the husk and the rachis on the tree should be observed at the beginning of winter after leaf fall.
5. The time of male and female flowering should be observed when 10% of the catkins or female flowers are in full bloom (at dehiscence of pollen or at full development of stigmas).
6. All observations on the leaf should be made on fully developed leaves of the middle third of a growing current season's shoot.
7. Time of maturity should be recorded at 50% of nut fall.
8. All observations on the nut should exclude the pericarp and should be made on physiological ripe nuts immediately after harvest.
9. All observations on the kernel should be made one month after harvest when the water content is less than 8%.

V. Grouping of Varieties

1. The collection of varieties to be grown should be divided into groups to facilitate the assessment of distinctness. Characteristics which are suitable for grouping purposes are those which are known from experience not to vary, or to vary only slightly, within a variety. Their various states of expression should be fairly evenly distributed throughout the collection.
2. It is recommended that the competent authorities use the following characteristics for grouping varieties:
 - (a) Tree: predominant location of fruit buds (characteristic 4)
 - (b) Time of maturity (characteristic 28)
 - (c) Time of leaf bud burst (characteristic 32).

VI. Characteristics and Symbols

1. To assess distinctness, uniformity and stability, the characteristics and their states as given in the Table of Characteristics should be used.

2. Notes (numbers), for the purposes of electronic data processing, are given opposite the states of expression for each characteristic.

3. Legend

(*) Characteristics that should be used on all varieties in every growing period over which examinations are made and always be included in the variety descriptions, except when the state of expression of a preceding characteristic or regional environmental conditions render this impossible.

(+) See Explanations on the Table of Characteristics in Chapter VIII.

VII. 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: Wuchsstärke	Árbol: vigor		
weak	faible	gering	débil	Chico, Gustine, Vina	3
medium	moyenne	mittel	medio	Franquette, Hartley, Marbot	5
strong	forte	stark	fuerte	Corne, Parisienne	7
very strong	très forte	sehr stark	muy fuerte	Serr	9
2. Tree: growth habit	Arbre: port	Baum: Wuchsform	Árbol: porte		
upright	dressé	aufrecht	erecto	Corne, Sorrento	1
semi-upright	demi-dressé	halbaufrecht	semierecto	Franquette, Hartley, Marbot	2
spreading	étalé	breitwüchsig	rastrero	Gustine, Payne, Vina	3
3. Tree: density of branches	Arbre: densité des rameaux	Baum: Dichte der Zweige	Árbol: densidad de las ramas		
very sparse	très faible	sehr locker	muy laxo		1
sparse	faible	locker	laxo	Corne, Parisienne	3
medium	moyenne	mittel	medio	Franquette, Marbot, Sorrento	5
dense	forte	dicht	denso	Hartley	7
very dense	très forte	sehr dicht	muy denso	Chico, Payne, Serr	9

English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
4. Tree: predominant location of fruit buds (* (+)	Arbre: localisation prédominante des bourgeons à fruit	Baum: vorwiegende Position der Fruchtknospen	Árbol: localización predominante de los yemas fructíferas		
at tip of one-year old shoot (fruiting on outer side of tree)	à l'extrémité des rameaux d'un an (fructification en périphérie de l'arbre)	an der Spitze der einjährigen Zweige (Fruchtbildung an der Außenseite des Baumes)	en el ápice de tallos de un año (fructificación en la parte externa del árbol)	Corne, Franquette, Marbot	1
mainly on the top of long shoots bound on branches of 2 years or older (fruiting in clusters)	principalement en extrémité de pousses longues insérées sur des rameaux de 2 ans ou plus (fructification par bouquets)	an der Spitze langer Triebe an zweijährigen oder älteren Zweigen (Fruchtbildung in Gruppen)	predominantemente en el extremo de tallos largos, sobre ramos de 2 o más años (fructificación en grupos)	Hartley	2
all along the one-year old shoot (fruiting on lateral brindilles)	tout le long des rameaux d'un an (fructification sur brindilles latérales)	auf die ganze Länge einjähriger Zweige verteilt (Fruchtbildung an kleinen Seitenzweigen)	a lo largo de tallos de 1 año (fructificación en brindillas laterales)	Chico, Payne, Serr	3
5. One-year-old shoot: color	Rameau d'un an: couleur	Einjähriger Trieb: Farbe	Rama de un año: color		
dark yellow	jaune foncé	dunkelgelb	amarillo oscuro	Milotai 10	1
light brown	brun clair	hellbraun	marrón claro	Grandjean	2
green brown	brun vert	grünbraun	marrón verde	Franquette	3
blackish	noirâtre	schwärzlich	negruzco	Corne, Marbot	4
6. Leaf: shape of lateral leaflet	Feuille: forme de la foliole latérale	Blatt: Form des Seitenfiederblatts	Hoja: forma del foliolo lateral		
narrow elliptic	elliptique étroite	schmal elliptisch	elíptico estrecho	Hartley, Payne, Vina	3
elliptic	elliptique	elliptisch	elíptico	Corne, Franquette, Marbot	5
broad elliptic	elliptique large	breit elliptisch	elíptico ancho	Adam 10, Chase D 9	7

English	français	deutsch	español	Example Varieties Exemples Beispielsorten Variedades ejemplo	Note/ Nota
7. Flower: number of male catkins	Fleur: nombre de chatons mâles	Blüte: Anzahl männlicher Kätzchen	Flor: número de amentos		
few	faible	gering	bajo	Parisienne	3
medium	moyen	mittel	medio	Franquette, Hartley, Marbot	5
many	élevé	groß	alto	Adams 10, Ronde de Montignac, Serr	7
8. Nut: size (*)	Noix: grosseur	Nuß: Größe	Nuez: tamaño		
very small	très petite	sehr klein	muy pequeño	Lozeronne	1
small	petite	klein	pequeño	Chico, Grandjean	3
medium	moyenne	mittel	mediano	Franquette, Marbot, Payne, Serr	5
large	grosse	groß	grande	Hartley	7
very large	très grosse	sehr groß	muy grande	Bijoux, Sunland	9
9. Nut: shape in longitudinal section (*) (+) <u>through</u> suture	Noix: forme en section longitudinale <u>au niveau</u> de la suture	Nuß: Form im Längsschnitt <u>durch</u> die Naht	Nuez: forma en sección longitudinal <u>al nivel</u> de la sutura		
circular	circulaire	kreisförmig	circular	Meylannaise	1
triangular	triangulaire	dreieckig	triangular	Hartley	2
broad ovate	ovale large	breit eiförmig	ovalado ancho	Marbot, Payne, Serr	3
ovate	ovale	eiförmig	ovalado	Gustine	4
broad trapezium	trapézoïdale large	breit trapezförmig	trapezoide ancho		5
trapezium	trapézoïdale	trapezförmig	trapezoide		6
broad elliptic	elliptique large	breit elliptisch	elíptico ancho	Parisienne	7
elliptic	elliptique	elliptisch	elíptico	Corne, Franquette, Sorrento	8

English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
10. Nut: shape in longitudinal section perpendicular to suture (* (+)	Noix: forme en section longitudinale perpendiculaire à la suture	Nuß: Form im Längsschnitt rechtwinklig zur Naht	Nuez: forma en sección longitudinal perpendicular a la sutura		
circular	circulaire	kreisförmig	circular	Meylannaise	1
triangular	triangulaire	dreieckig	triangular	Hartley	2
broad ovate	ovale large	breit eiförmig	ovalado ancho	Payne, Serr	3
ovate	ovale	eiförmig	ovalado	Gustine	4
broad trapezium	trapézoïdale large	breit trapezförmig	trapezoide ancho	Chico, Marbot, Mayette, Pedro	5
trapezium	trapézoïdale	trapezförmig	trapezoide	Corne	6
broad elliptic	elliptique large	breit elliptisch	elíptico ancho	Franquette	7
elliptic	elliptique	elliptisch	elíptico	Sorrento	8
cordate	cordiforme	herzförmig	cordiforme		9
11. Nut: shape in cross section (* (+)	Noix: forme en section transversale	Nuß: Form im Querschnitt	Nuez: forma en sección transversal		
oblate	aplatie	abgeplattet	achatado	Chico, Franquette	1
circular	circulaire	kreisförmig	circular	Marbot, Payne	2
elliptic	elliptique	elliptisch	elíptico	Corne, Hartley, Serr	3
12. Nut: index of roundness (* (+)	Noix: indice de rondité	Nuß: Rundheitsindex	Nuez: índice de circularidad		
very low	très faible	sehr klein	muy bajo	Sorrento	1
low	faible	klein	bajo	Corne, Franquette, Payne	3
medium	moyen	mittel	medio	Chico, Marbot, Serr	5
high	élevé	groß	alto	Meylannaise	7
very high	très élevé	sehr groß	muy alto		9

English	français	deutsch	español	Example Varieties Exemples Beispielsorten Variedades ejemplo	Note/ Nota
13. Nut: shape of base perpendicular to suture (* (+)	Noix: forme de la base perpendiculaire à la suture	Nuß: Form der Basis rechtwinklig zur Naht	Nuez: forma de la base perpendicular a la sutura		
cuneate	cunéiforme	keilförmig	cuneiforme	Corne	1
rounded	arrondie	abgerundet	redondeada	Chico, Franquette, Payne, Serr	2
truncate	tronquée	stumpf	truncada	Mayette, Parisienne	3
emarginate	récurrente	eingesenkt	asurcada	Hartley	4
14. Nut: shape of apex perpendicular to suture (* (+)	Noix: forme du sommet perpendiculaire à la suture	Nuß: Form der Spitze rechtwinklig zur Naht	Nuez: forma del ápice perpendicular a la sutura		
pointed	aigu	spitz	en punta	Gustine, Hartley	1
rounded	arrondi	abgerundet	redondeado	Chico, Marbot, Serr	2
truncate	tronqué	stumpf	truncado	Corne, Grandjean, Pedro	3
emarginate	récurrent	eingesenkt	asurcado	Parisienne	4
15. Nut: prominence of apical tip (* (+)	Noix: importance de la pointe	Nuß: Ausprägung der Spitze	Nuez: prominencia del extremo superior		
weak	faible	gering	débil	Grandjean, Mayette	3
medium	moyenne	mittel	media	Chico, Corne, Hartley	5
strong	forte	stark	fuerte	Franquette, Marbot, Payne, Serr	7
16. Nut: position of pad on suture (* (+)	Noix: position du bourrelet de suture	Nuß: Position des Wulstes auf der Naht	Nuez: localización del almohadillado de la sutura		
on upper half	sur la moitié supérieure	auf der oberen Hälfte	en la mitad superior	Chico, Hartley, Marbot, Mayette, Parisienne	1
on upper 2/3	sur les deux tiers supérieurs	auf den oberen zwei Dritteln	en los dos tercios superiores	Franquette, Gustine, Payne, Pedro	2
on whole length	sur la totalité de la longueur	auf der ganzen Länge	a todo lo largo	Corne, Serr	3

English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
17. Nut: prominence of pad on suture (* (+)	Noix: importance du bourrelet de suture	Nuß: Ausprägung des Wulstes auf der Naht	Nuez: prominencia del almohadillado de la sutura		
weak	faible	gering	débil	Chico, Grandjean, Mayette	3
medium	moyenne	mittel	media	Gustine, Hartley, Pedro	5
strong	forte	stark	fuerte	Franquette, Marbot, Payne, Serr	7
18. Nut: width of pad on suture (+)	Noix: largeur du bourrelet de suture	Nuß: Breite des Wulstes auf der Naht	Nuez: anchura del almohadillado de la sutura		
narrow	étroit	schmal	estrecho	Gustine, Payne, Serr	3
medium	moyen	mittel	medio	Chico, Corne, Franquette	5
broad	large	breit	ancho	Hartley, Marbot, Pedro	7
19. Nut: depth of groove along pad on suture (+)	Noix: profondeur des anfractuosités le long du bourrelet sur la suture	Nuß: Tiefe der Furche entlang des Wulstes auf der Naht	Nuez: profundidad del surco a lo largo del almohadillado de la sutura		
shallow	peu profondes	flach	poco profundo	Chico, Grandjean, Parisienne	3
medium	moyennes	mittel	medio	Gustine, Hartley, Mayette	5
deep	profondes	tief	profundo	Corne, Marbot, Payne, Serr	7
20. Nut: structure of surface of shell	Noix: structure de la surface de la coque	Nuß: Oberflächenstruktur der Schale	Nuez: estructura de la superficie de la cáscara		
slightly grooved	peu sillonnée	kaum gefurcht	ligeramente acanalada	Meylannaise	1
moderately grooved	moyennement sillonnée	mäßig gefurcht	moderadamente, acanalada	Chico, Grandjean, Mayette	2
strongly grooved	fortement sillonnée	stark gefurcht	fuertemente acanalada	Franquette, Hartley, Marbot	3
embossed	bosselée	höckerig	protuberancias irregulares	Corne, Parisienne, Payne, Pedro	4

English	français	deutsch	español	Example Varieties Exemples Beispielsorten Variedades ejemplo	Note/ Nota
21. Nut: thickness of shell (*)	Noix: épaisseur de la coque	Nuß: Dicke der Schale	Nuez: grosor de la cáscara		
very thin	très mince	sehr dünn	muy delgada	Pedro, Serr	1
thin	mince	dünn	delgada	Chico, Grandjean, Gustine, Payne	3
medium	moyenne	mittel	media	Franquette, Hartley, Marbot	5
thick	épaisse	dick	gruesa	Corne	7
22. Nut: adherence of two halves of shell	Noix: adhérence des deux moitiés de la coque	Nuß: Haften der zwei Schalenhälften aneinander	Nuez: adherencia de las dos mitades de la cáscara		
very weak	très faible	sehr gering	muy débil	Pedro	1
weak	faible	gering	débil	Marbot, Vina	3
medium	moyenne	mittel	media	Hartley, Mayette, Parisienne	5
strong	forte	stark	fuerte	Franquette, Payne, Serr	7
very strong	très forte	sehr stark	muy fuerte	Adams 10, Corne	9
23. Nut: thickness of primary and secondary dividing membranes (+)	Noix: épaisseur des cloisons primaires et secondaires	Nuß: Dicke der primären und sekundären Scheidewände	Nuez: grosor de las membranas divisorias primarias y secundarias		
thin	minces	dünn	delgada	Chico, Grandjean, Payne, Serr	3
medium	moyennes	mittel	media	Franquette, Marbot	5
thick	épaisses	dick	gruesa	Corne	7

English	français	deutsch	español	Example Varieties Exemples Beispielsorten Variedades ejemplo	Note/ Nota
24. Kernel: ease of removal (*)	Cerneau: facilité d'extraction	Kern: Leichtigkeit des Entfernens	Semilla: facilidad de extracción		
very easy	très aisée	sehr leicht	muy fácil	Payne, Pedro, Serr	1
easy	aisée	leicht	fácil	Franquette, Hartley, Marbot	3
medium	moyenne	mittel	media	Meylannaise	5
difficult	difficile	schwer	difícil	Corne	7
25. Kernel: intensity of ground color	Cerneau: intensité de la couleur de fond	Kern: Intensität der Grundfarbe	Semilla: intensidad del color de fondo		
very light	très claire	sehr hell	muy clara	Chandler	1
light	claire	hell	clara	Franquette, Hartley, Serr	3
medium	moyenne	mittel	media	Marbot, Parisienne	5
dark	foncée	dunkel	oscura		7
26. Kernel: size	Cerneau: grosseur	Kern: Größe	Semilla: tamaño		
very small	très petit	sehr klein	muy pequeño	Lozeronne	1
small	petit	klein	pequeño	Chico, Corne, Grandjean	3
medium	moyen	mittel	medio	Franquette, Marbot, Payne	5
large	grand	groß	grande	Hartley, Serr	7
very large	très grand	sehr groß	muy grande	Sunland	9

English	français	deutsch	español	Example Varieties Exemples Beispielsorten Variedades ejemplo	Note/ Nota	
27. (*)	Kernel: percentage of weight relative to total weight of nut	Cerneau: pourcentage du poids par rapport au poids total du fruit	Kern: relativer Anteil am Gesamtgewicht der Nuß	Semilla: porcentaje del peso en relación con el peso total del nuez		
	very low	très faible	sehr gering	muy bajo	Corne	1
	low	faible	gering	bajo	Marbot, Mayette	3
	medium	moyen	mittel	medio	Franquette, Hartley, Pedro, Sorrento	5
	high	élevé	hoch	alto	Chase D 9, Payne, Vina	7
	very high	très élevé	sehr hoch	muy alto	Serr	9
28. (*)	Time of maturity	Époque de maturité	Zeitpunkt der Reife	Época de madurez		
	early	précoce	früh	precoz	Chico, Payné, Serr	3
	early to medium	précoce à moyenne	früh bis mittel	precoz a media	Hartley, Marbot, Pedro	4
	medium	moyenne	mittel	media	Grandjean, Mayette	5
	medium to late	moyenne à tardive	mittel bis spät	media a tardía	Corne, Franquette, Sorrento	6
	late	tardive	spät	tardía	Candelou	7
29.	Time of leaf fall	Époque de dé-feuillaison	Zeitpunkt des Laub-falls	Época de defoliación		
	early	précoce	früh	precoz	Adams 10, Chase D 9	3
	medium	moyenne	mittel	media	Franquette, Grandjean, Hartley	5
	late	tardive	spät	tardía	Ashley, Chico, Marbot, Serr	7
30.	Leaf: persistence of rachis	Feuille: persistance du rachis	Blatt: Anhaften der Spindel	Hoja: persistencia del raquis		
	not persistent	non persistant	nicht anhaftend	no persistente	Franquette, Hartley, Marbot, Payne	1
	persistent	persistant	anhaftend	persistente	Grandjean	2

English	français	deutsch	español	Example Varieties Exemples Beispielsorten Variedades ejemplo	Note/ Nota
31. Husk: persistence on tree after nut fall	Brou: persistance sur l'arbre après la chute de la noix	Nußhülle: Anhaften am Baum nach dem Abfallen der Nuß	Vaina: persistencia en el árbol tras la caída de la nuez		
not persistent	nulle	nicht anhaftend	no persistente	Franquette, Hartley, Parisienne	1
partially persistent	partielle	teilweise anhaftend	parcialmente persistente	Pedro	2
fully persistent	totale	vollständig anhaftend	completamente persistente	Geisenheim 139, Tehama	3
32. (* Time of leaf bud burst	Époque de débourrement foliaire	Zeitpunkt des Blattknospenaufbruchs	Época de brotación de las hojas		
very early	très précoce	sehr früh	muy precoz	Serr	1
very early to early	très précoce à précoce	sehr früh bis früh	muy precoz a precoz	Ashley, Chico, Payne	2
early	précoce	früh	precoz	Chase D 9, Sorrento, Vina	3
early to medium	précoce à moyenne	früh bis mittel	precoz a media	Adams 10, Hartley, Pedro	4
medium	moyenne	mittel	media	Chandler, Howard	5
medium to late	moyenne à tardive	mittel bis spät	media a tardía	Grandjean, Marbot, Mayette	6
late	tardive	spät	tardía	Franquette, Parisienne	7
late to very late	tardive à très tardive	spät bis sehr spät	tardía a muy tardía	Ronde de Montignac	8
very late	très tardive	sehr spät	muy tardía		9

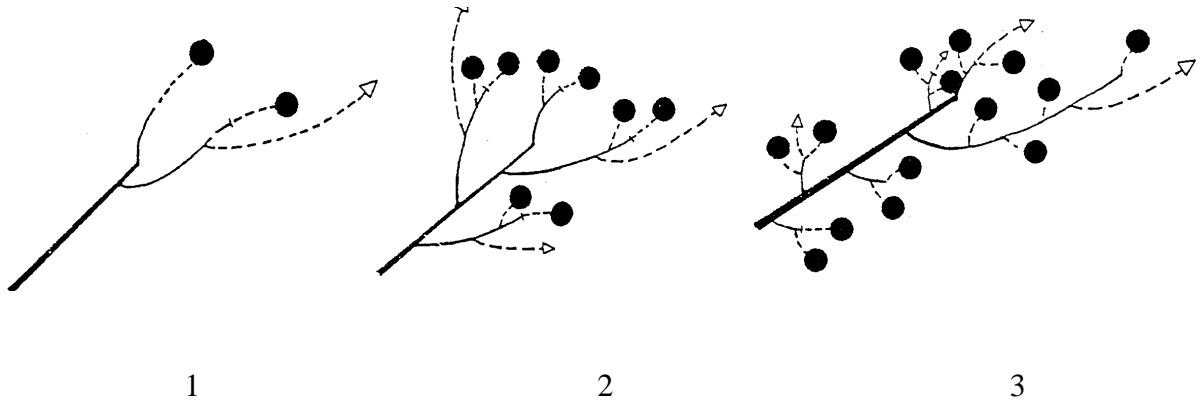
English	français	deutsch	español	Example Varieties Exemples Beispielsorten Variedades ejemplo	Note/ Nota
33. Time of male flowering (*)	Époque de floraison mâle	Zeitpunkt der Blüte der männlichen Blüten	Época de la floración masculina		
very early	très précoce	sehr früh	muy precoz		1
very early to early	très précoce à précoce	sehr früh bis früh	muy precoz a precoz	Serr	2
early	précoce	früh	precoz	Ashley, Chase D 9, Gustine, Sorrento	3
early to medium	précoce à moyenne	früh bis mittel	precoz a media	Hartley, Pedro	4
medium	moyenne	mittel	media	Marbot	5
medium to late	moyenne à tardive	mittel bis spät	media a tardía	Corne, Grandjean	6
late	tardive	spät	tardía	Franquette, Parisienne	7
late to very late	tardive à très tardive	spät bis sehr spät	tardía a muy tardía	Meylannaise, Ronde de Montignac	8
very late	très tardive	sehr spät	muy tardía		9
34. Time of female flowering (*)	Époque de floraison femelle	Zeitpunkt der Blüte der weiblichen Blüten	Época de la floración femenina		
very early	très précoce	sehr früh	muy precoz		1
very early to early	très précoce à précoce	sehr früh bis früh	muy precoz a precoz	Ashley, Chico, Serr	2
early	précoce	früh	precoz	Chase D 9, Sorrento, Vina	3
early to medium	précoce à moyenne	früh bis mittel	precoz a media	Chandler, Hartley, Pedro	4
medium	moyenne	mittel	media	Marbot	5
medium to late	moyenne à tardive	mittel bis spät	media a tardía	Corne, Grandjean, Mayette	6
late	tardive	spät	tardía	Franquette, Parisienne, Ronde de Montignac	7
late to very late	tardive à très tardive	spät bis sehr spät	tardía a muy tardía	Romaine	8
very late	très tardive	sehr spät	muy tardía		9

English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
35. (*)					
Time of male flowering compared to female flowering	Époque de la floraison mâle en comparaison à la floraison femelle	Zeitpunkt der Blüte der männlichen Blüte im Vergleich zur weiblichen Blüte	Época de la floración masculina comparada con la floración femenina		
before (protandry)	antérieure (protandrie)	vorausgehend (Protandrie)	anterior (protandria)	Ashley, Franquette, Marbot, Payne	1
simultaneous (homogamy)	simultanée (homogamie)	gleichzeitig (Homogamie)	simultánea (homogamia)	Meylannaise, Ronde de Montignac	2
after (protogyny)	postérieure (protogynie)	nachfolgend (Protogynie)	después (protoginia)	Amigo, Chico	3

VIII. Explanation on the Table of Characteristics

Ad. 4: Tree: predominant location of fruit buds

The type of fruiting (predominant location of fruit buds) should be observed at the time of full bloom of the female flowers.

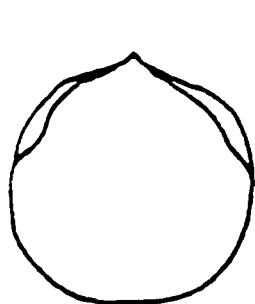


1
at tip of one-year old shoot
(fruiting on outer side of tree)

2
mainly on the top of long
shoots bound on branches of
2 years or older (fruiting in
clusters)

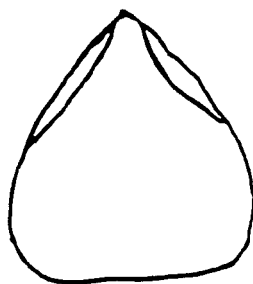
3
all along the one-year old
shoot (fruiting on lateral
brindilles)

Ad. 9: Nut: shape in longitudinal section through suture



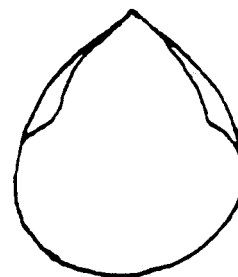
1

circular



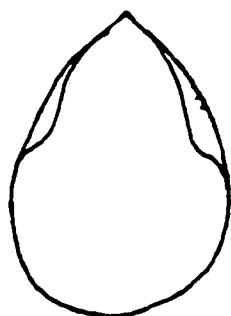
2

triangular



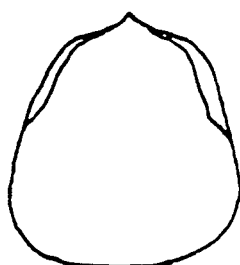
3

broad ovate



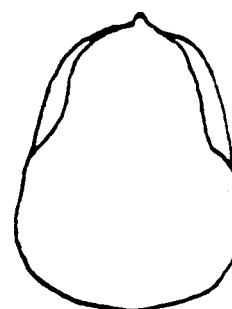
4

ovate



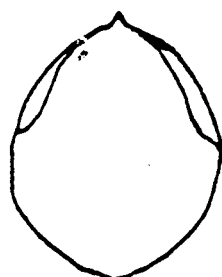
5

broad trapezium



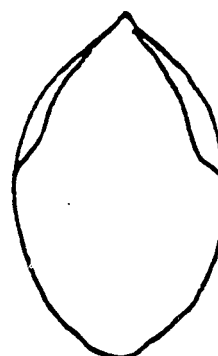
6

trapezium



7

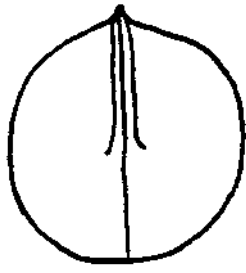
broad elliptic



8

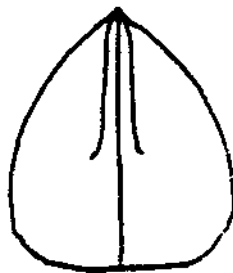
elliptic

Ad. 10: Nut: shape in longitudinal section perpendicular to suture



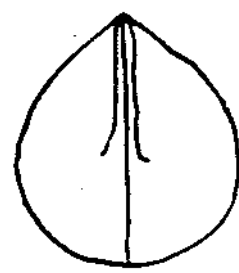
1

circular



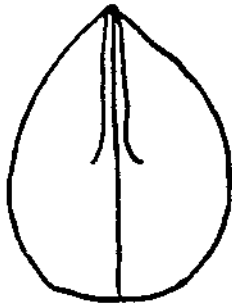
2

triangular



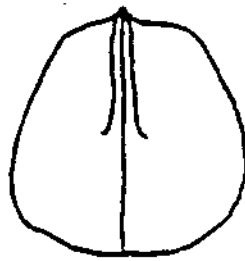
3

broad ovate



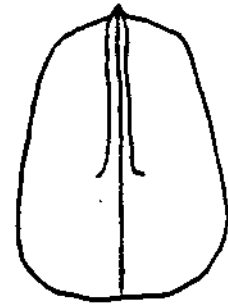
4

ovate



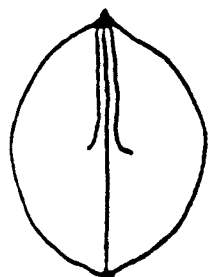
5

broad trapezium



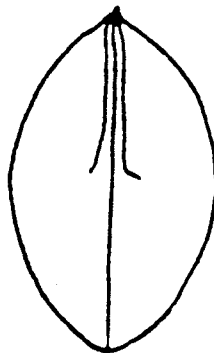
6

trapezium



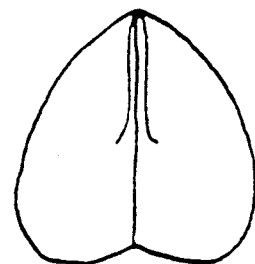
7

broad elliptic



8

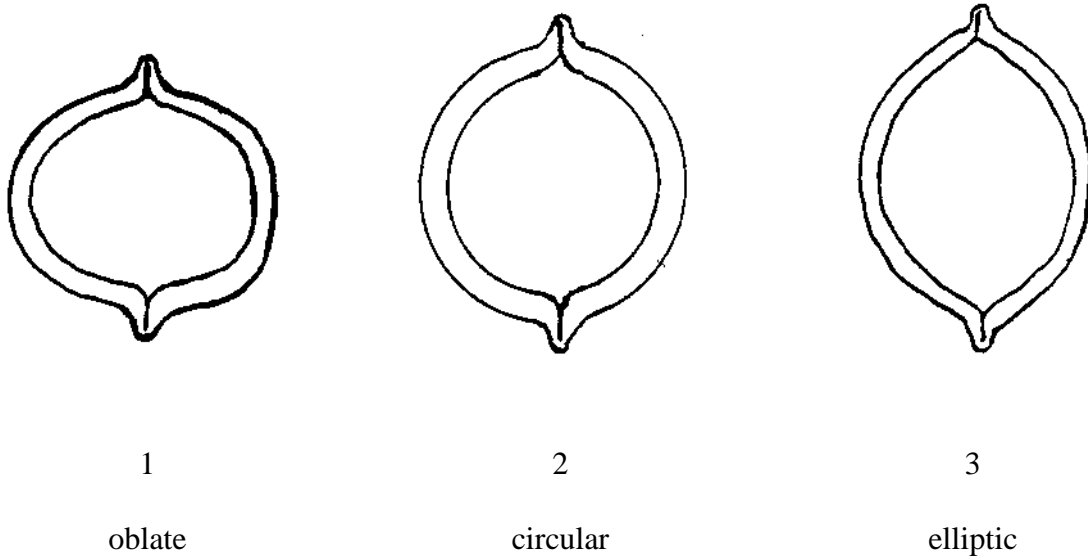
elliptic



9

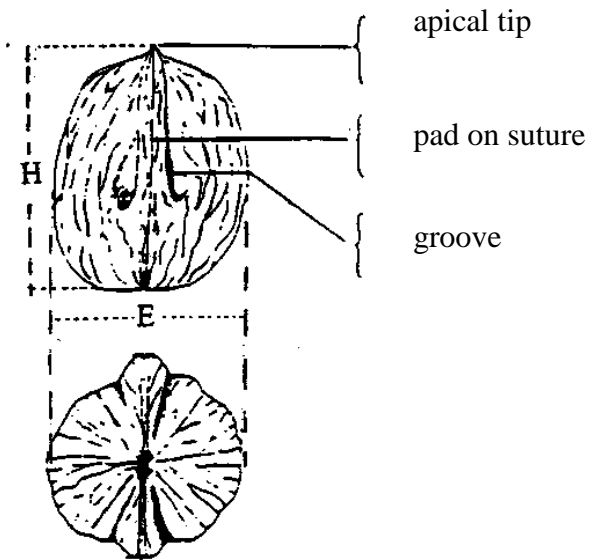
cordate

Ad. 11: Nut: shape in cross section



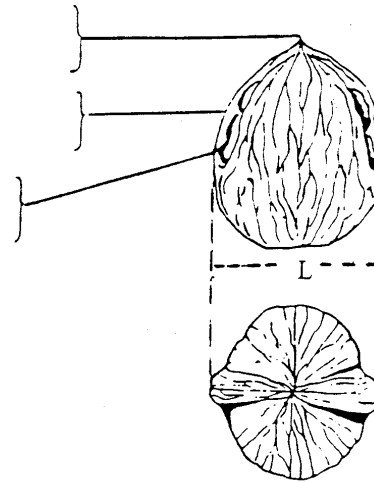
Ad. 12 - 19: Characteristics of the nut

longitudinal section perpendicular to suture



view from above

longitudinal section through suture



view from below

Index of roundness (12): $R = (E + L)/2H$ (E = thickness; L = width; H = height)

Ad. 13: Nut: shape of base perpendicular to suture



1

cuneate



2

rounded



3

truncate



4

emarginate

Ad. 14: Nut: shape of apex perpendicular to suture



1

pointed



2

rounded



3

truncate



4

emarginate

Ad. 15: Nut: prominence of apical tip



3

weak



5

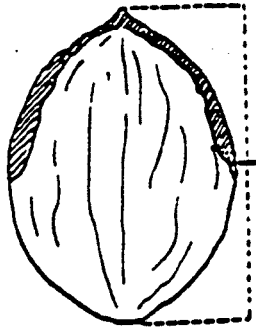
medium



7

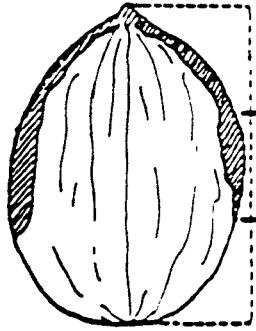
strong

Ad. 16: Nut: position of pad on suture



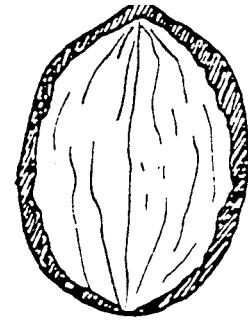
1

on upper half of nut



2

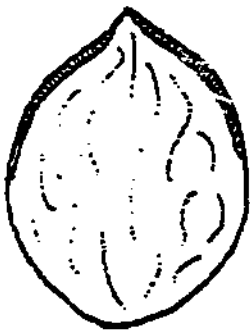
on upper 2/3 of nut



3

on whole length

Ad. 17: Nut: prominence of pad on suture



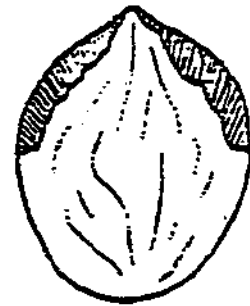
3

weak



5

medium



7

strong

Ad. 18: Nut: width of pad on suture



3

narrow



5

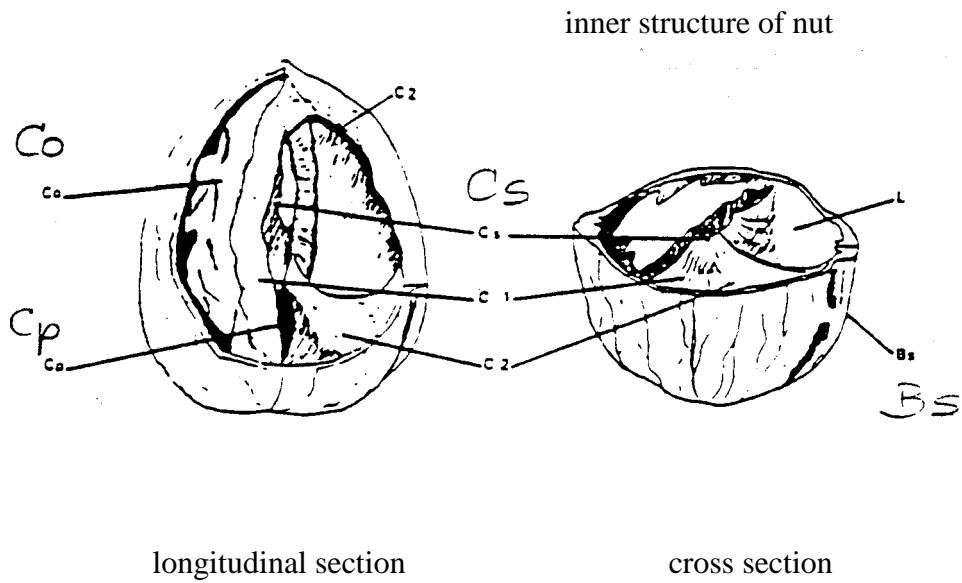
medium



7

broad

Ad. 23: Nut: thickness of primary and secondary dividing membranes



- Legend:
- Co: kernel
 - Cs: Septem
 - Cp: Placenta
 - L: chamber
 - Bs: margins of suture of valves
 - C1: primary dividing membrane
 - C2: secondary dividing membrane

IX. Literature

Chartier, A., Germain, E., Jalinat, J., Leglise, P., Masseron, A., Tronel, C., 1983: "Le noyer, résultats de 20 ans d'expérimentation: comportement dans le Sud-Ouest et la Basse Vallée du Rhône de 65 variétés d'origine française ou étrangère," *Arbo. Fruit* (356) 55-60, (357), 43-59, France

Friedrich, G., Schuricht, W., 1990: "Nüsse und Quitten," Neumann-Verlag Leipzig, Radebeul

Germain, E., Jalinat, J., Marchou, M., 1981: "Structure et développement du fruit chez le noyer commun," *Le noyer*, CTIFL, Paris ed. Chap, II, 29 - 36, France

Hendricks, L.C., McGranahan, G.H., Ramos, D.E., Iwakiri, B., Forde, H.I., 1985: "Selection of Varieties in Walnut Orchard Management," Publication 21410. Univ. of California 46 - 51, USA

Korac, M., Kuzmanovski, I., Hlilic, T., Vokurka, F., Bugaric, V., 1983: "A New Yugoslavian Range of Walnut Varieties," *Jugoslovensko vocarstvo* 17 (63-64) 111-118

Stojan, D., 1972: "Die Juglandales," *Mitt. Dtsch. Dendrol. Ges.* 64, 41-76

Stritzke, S., 1961: "Wal- und Haselnüsse," VEB Deutscher Landwirtschaftsverlag, Berlin

Tamponi, G., 1980: "Il Noce," *Agricoltura Ricerca* 3 (10) 50-58

X. Technical Questionnaire

	Reference Number (not to be filled in by the applicant)
<p>TECHNICAL QUESTIONNAIRE to be completed in connection with an application for plant breeders' rights</p>	
1. Species	<p><i>Juglans regia</i> L. WALNUT</p>
2. Applicant (Name and address)	
3. Proposed denomination or breeder's reference	

4. Information on origin, maintenance and reproduction of the variety

4.1 Origin

(a) Seedling of unknown parentage

(b) Produced by controlled pollination
(indicate parent varieties)

– Seed bearing parent (indicate parent)

.....

– Pollen parent (indicate parent)

.....

(c) Produced by open pollination of
(indicate seed bearing parent plant)

.....

(d) Mutation or sport from (indicate original parent variety)

.....

(e) Discovery (indicate where and when)

.....

4.2 *In vitro* propagation

The plant material of the candidate variety has been obtained
by *in vitro* propagation

yes

no

4.3 Pollenizer

Good pollenizers of the candidate variety are the following varieties:

.....

4.4 Virus status

- (a) The variety is free from all known viruses as follows: []
(indicate from which viruses)

.....

- (b) The plant material is virus tested []
(indicate against which viruses)

.....

- (c) The virus status is unknown []

4.5 Other information

5. Characteristics of the variety to be indicated (the number in brackets refers to the corresponding characteristic in Test Guidelines; please mark the state of expression which best corresponds).

Characteristics	Example Varieties	
5.1 Tree: predominant location of fruit buds (4)		
at tip of one-year old shoot (fruiting on outer side of tree)	Corne, Franquette, Marbot	1[]
mainly on the top of long shoots bound on branches of 2 years or older (fruiting in clusters)	Hartley	2[]
all along the one-year old shoot (fruiting on lateral brindilles)	Chico, Payne, Serr	3[]
5.2 Time of maturity (28)		
early	Chico, Payné, Serr	3[]
early to medium	Hartley, Marbot, Pedro	4[]
medium	Grandjean, Mayette	5[]
medium to late	Corne, Franquette, Sorrento	6[]
late	Candelou	7[]
5.3 Leaf: persistence of rachis (30)		
not persistent	Franquette, Hartley, Marbot, Payne	1[]
persistent	Grandjean	2[]
5.4 Time of leaf bud burst (32)		
very early	Serr	1[]
very early to early	Ashley, Chico, Payne	2[]
early	Chase D 9, Sorrento, Vina	3[]
early to medium	Adams 10, Hartley, Pedro	4[]
medium	Chandler, Howard	5[]
medium to late	Grandjean, Marbot, Mayette	6[]
late	Franquette, Parisienne	7[]
late to very late	Ronde de Montignac	8[]
very late		9[]

6. Similar varieties and differences from these varieties

Denomination of similar variety	Characteristic in which the similar variety is different ^{o)}	State of expression of similar variety	State of expression of candidate variety
---------------------------------	--	--	--

^{o)} In the case of identical states of expressions of both varieties, please indicate the size of the difference.

7. Additional information which may help to distinguish the variety

7.1 Resistance to pests and diseases

7.2 Special conditions for the examination of the variety

7.3 Other information

A representative color photo of the variety should be added to 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 that question is yes, please attach a copy of such an authorization.

[End of document]

