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TG/JATRO_CUR(proj.5)
ORIGINAL: English
DATE: 2021-07-01

INTERNATIONAL UNION FOR THE PROTECTION OF NEW VARIETIES OF PLANTS

Geneva

DRAFT

PHYSIC NUT

UPOV Code(s): JATRO_CUR

Jatropha curcas L.

GUIDELINES

FOR THE CONDUCT OF TESTS

FOR DISTINCTNESS, UNIFORMITY AND STABILITY

prepared by an expert from Mexico

to be considered by the

Technical Committee at its fifty-seventh session
to be held in Geneva on October 25 and 26, 2021

Disclaimer: this document does not represent UPOV policies or guidance

Alternative names:*

Botanical name	*English*	*French*	*German*	*Spanish*
Jatropha curcas L.	Physic Nut, Barbados-nut, Bubblebush, Purgenut, Purgingnut	Fève d'enfer, Grand pignon d'Inde, Gros ricin, Jatropha, Médicinier, Noix des Barbades, Pignon d'Inde, Pourghère, Purghère	Purgiernuss, Termitenbaum	Piñón mexicano, Piñón, Piñón blanco, Frailejón, Tártago

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.]

TABLE OF CONTENTS PAGE

1. Subject of these Test Guidelines

These Test Guidelines apply to all varieties of *Jatropha curcas* 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 young plants or seed.

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

Vegetatively propagated varieties: 5 young plants.
Seed-propagated varieties: 30 seeds.

In the case of seed, the seed should meet the minimum requirements for germination, species and analytical purity, health and moisture content, specified by the competent 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.

3.1.4 The growing cycle is considered to be the period ranging from the beginning of development of an individual flower or inflorescence, through fruit development and concluding with the harvesting of fruit from the corresponding individual flower or inflorescence.

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

3.2 Testing Place

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

3.3 Conditions for Conducting the Examination

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

3.4 Test Design

3.4.1 In the case of vegetatively propagated varieties, each test should be designed to result in a total of at least 5 trees.

3.4.2 In the case of seed-propagated varieties, each test should be designed to result in a total of at least 15 trees.

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

In the case of vegetatively propagated varieties, unless otherwise indicated, for the purposes of distinctness, all observations on single plants should be made on 5 plants or parts taken from each of 5 plants and any other observation 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.

In the case of seed-propagated varieties, unless otherwise indicated, for the purposes of distinctness, all observations on single plants should be made on 15 plants or parts taken from each of 15 plants and any other observation made on all plants in the test, disregarding any off-type plants.

In the case of observations of parts taken from single plants, the number of parts to be taken from each of the plants should be 2.

4.1.5 Method of Observation

The recommended method of observing the characteristic for the purposes of distinctness is indicated by the following key in the Table of Characteristics (see document TGP/9 “Examining Distinctness”, Section 4 “Observation of characteristics”):

MG: single measurement of a group of plants or parts of plants
MS: measurement of a number of individual plants or parts of plants
VG: visual assessment by a single observation of a group of plants or parts of plants
VS: visual assessment by observation of individual plants or parts of plants

Type of observation: visual (V) or measurement (M)

“Visual” observation (V) is an observation made on the basis of the expert’s judgment. For the purposes of this document, “visual” observation refers to the sensory observations of the experts and, therefore, also includes smell, taste and touch. Visual observation includes observations where the expert uses reference points (e.g. diagrams, example varieties, side-by-side comparison) or non-linear charts (e.g. color charts). Measurement (M) is an objective observation against a calibrated, linear scale e.g. using a ruler, weighing scales, colorimeter, dates, counts, etc.

Type of record: for a group of plants (G) or for single, individual plants (S)

For the purposes of distinctness, observations may be recorded as a single record for a group of plants or parts of plants (G), or may be recorded as records for a number of single, individual plants or parts of plants (S). In most cases, “G” provides a single record per variety and it is not possible or necessary to apply statistical methods in a plant-by-plant analysis for the assessment of distinctness.

In cases where more than one method of observing the characteristic is indicated in the Table of Characteristics (e.g. VG/MG), guidance on selecting an appropriate method is provided in document TGP/9, Section 4.2.

4.2 Uniformity

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

4.2.2 These Test Guidelines have been developed for the examination of vegetatively and cross-pollinated seed-propagated varieties. For varieties with other types of propagation, the recommendations in the General Introduction and document TGP/13 "Guidance for new types and species" Section 4.5 "Testing Uniformity" should be followed.

4.2.3 The assessment of uniformity for cross-pollinated varieties should be according to the recommendations for cross-pollinated varieties in the General Introduction.

4.2.4 For the assessment of uniformity of vegetatively propagated, 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 seed or plant stock to ensure that it exhibits the same characteristics as those shown by the initial material supplied.

5. Grouping of Varieties and Organization of the Growing Trial

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

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

5.3 The following have been agreed as useful grouping characteristics:

(a) Leaf blade: serration on margin (characteristic 7)
(b) Leaf blade: number of lobes (characteristic 9)
(c) Petiole: intensity of anthocyanin coloration (characteristic 11)
(d) Fruit: length (characteristic 19)
(e) Seed: length (characteristic 24)

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

6. Introduction to the Table of Characteristics

6.1 Categories of Characteristics

6.1.1 Standard Test Guidelines Characteristics

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

6.1.2 Asterisked Characteristics

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

6.2 States of Expression and Corresponding Notes

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

6.2.2 All relevant states of expression are presented in the characteristic.

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

6.3 Types of Expression

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

6.4 Example Varieties

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

6.5 Legend

	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
1 2	**3 4**	**5 6**	**7**			
	Name of characteristics in English	**Nom du caractère en français**	**Name des Merkmals auf Deutsch**	**Nombre del carácter en español**		
	states of expression	types d'expression	Ausprägungsstufen	tipos de expresión		

1 Characteristic number

2 (*) Asterisked characteristic – see Chapter 6.1.2

3 Type of expression
QL Qualitative characteristic – see Chapter 6.3
QN Quantitative characteristic – see Chapter 6.3
PQ Pseudo-qualitative characteristic – see Chapter 6.3

4 Method of observation (and type of plot, if applicable)
MG, MS, VG, VS – see Chapter 4.1.5

5 (+) See Explanations on the Table of Characteristics in Chapter 8.2

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

7 Not applicable

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

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
1.		**QN VG**	**(+)**				
		Tree: growth habit	**Arbre : port**	**Baum: Wuchsform**	**Árbol: hábito de crecimiento**		
		upright	dressé	aufrecht	erecto	Don Rafael	1
		semi upright	demi-dressé	halbaufrecht	semierecto	Gran Victoria, Sevangel	2
		spreading	étalé	breitwüchsig	extendido	ALJC-01, Doña Aurelia	3
2.		**QN VG**	**(+)**				
		Young leaf blade: intensity of anthocyanin coloration	**Jeune limbe : intensité de la pigmentation anthocyanique**	**Spreite des jungen Blattes: Intensität der Anthocyanfärbung**	**Limbo joven: intensidad de la pigmentación antociánica**		
		absent or very weak	absente ou très faible	fehlend oder sehr gering	ausente o muy débil	ALJC-01, Doña Aurelia	1
		very weak to weak	très faible à faible	sehr gering bis gering	muy débil a débil		2
		weak	faible	gering	débil		3
		weak to medium	faible à moyenne	gering bis mittel	débil a media		4
		medium	moyenne	mittel	media		5
		medium to strong	moyenne à forte	mittel bis stark	media a fuerte		6
		strong	forte	stark	fuerte	Ladda 1	7
		strong to very strong	forte à très forte	stark bis sehr stark	fuerte a muy fuerte		8
		very strong	très forte	sehr stark	muy fuerte		9
3.	**(*)**	**QN MS/VG**	**(a)**				
		Leaf blade: length	**Limbe : longueur**	**Blattspreite: Länge**	**Limbo: longitud**		
		very short	très courte	sehr kurz	muy corta		1
		very short to short	très courte à courte	sehr kurz bis kurz	muy corta a corta		2
		short	courte	kurz	corta	ALJC-X1	3
		short to medium	courte à moyenne	kurz bis mittel	corta a media		4
		medium	moyenne	mittel	media	Don Rafael	5
		medium to long	moyenne à longue	mittel bis lang	media a larga		6
		long	longue	lang	larga		7
		long to very long	longue à très longue	lang bis sehr lang	larga a muy larga		8
		very long	très longue	sehr lang	muy larga		9

	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
4.	**QN MS/VG**	**(a)**				
	Leaf blade: width	**Limbe : largeur**	**Blattspreite: Breite**	**Limbo: anchura**		
	very narrow	très étroite	sehr schmal	muy estrecha		1
	very narrow to narrow	très étroite à étroite	sehr schmal bis schmal	muy estrecha a estrecha		2
	narrow	étroite	schmal	estrecha	Ladda 1	3
	narrow to medium	étroite à moyenne	schmal bis mittel	estrecha a media		4
	medium	moyenne	mittel	media	Don Rafael	5
	medium to broad	moyenne à large	mittel bis breit	media a ancha		6
	broad	large	breit	ancha		7
	broad to very broad	large à très large	breit bis sehr breit	ancha a muy ancha		8
	very broad	très large	sehr breit	muy ancha		9
5.	**QN MS/VG**	**(a)**				
	Leaf blade: ratio length/width	**Limbe : rapport longueur/largeur**	**Blattspreite: Verhältnis Länge/Breite**	**Limbo: relación longitud/anchura**		
	very low	très bas	sehr klein	muy baja		1
	very low to low	très bas à bas	sehr klein bis klein	muy baja a baja		2
	low	bas	klein	baja		3
	low to medium	bas à moyen	klein bis mittel	baja a media		4
	medium	moyen	mittel	media	Ladda 1	5
	medium to high	moyen à élevé	mittel bis groß	media a alta		6
	high	élevé	groß	alta	Don Rafael, Doña Aurelia	7
	high to very high	élevé à très élevé	groß bis sehr groß	alta a muy alta		8
	very high	très élevé	sehr groß	muy alta		9
6.	**QL VG**	**(+) (a)**				
	Leaf blade: shape of base	**Limbe : forme de la base**	**Blattspreite: Form der Basis**	**Limbo: forma de la base**		
	rounded	arrondie	abgerundet	redondeada	ALJC-01, Ladda 1	1
	straight	droite	gerade	recta	Doña Aurelia, Sevangel	2
7.	**(*) QL VG**	**(+) (a)**				
	Leaf blade: serration on margin	**Limbe : dentelure du bord**	**Blattspreite: Randeinschnitte**	**Limbo: serrado del margen**		
	absent	absente	fehlend	ausente	ALJC-01, Doña Aurelia	1
	present	présente	vorhanden	presente		9

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
8.		**QL VG**	**(+) (a)**				
		Leaf blade: shape of tip	**Limbe : forme du sommet**	**Blattspreite: Form der Spitze**	**Limbo: forma del ápice**		
		apiculate	apiculée	fein zugespitzt	apiculada	Sevangel	1
		acuminate	acuminée	zugespitzt	acuminada	ALJC-01, ALJC-X1	2
9.	**(*)**	**QN VG**	**(+) (a)**				
		Leaf blade: number of lobes	**Limbe : nombre de lobes**	**Blattspreite: Anzahl Lappen**	**Limbo: número de lóbulos**		
		one	un	einer	uno		1
		three	trois	drei	tres	Doña Aurelia, Gran Victoria	2
		more than three	plus de trois	mehr als drei	más de tres		3
10.	**(*)**	**QN MS/VG**	**(b)**				
		Petiole: length	**Pétiole : longueur**	**Blattstiel: Länge**	**Pecíolo: longitud**		
		very short	très courte	sehr kurz	muy corta		1
		short	courte	kurz	corta	ALJC-X1	2
		medium	moyenne	mittel	media	ALJC-01, Gran Victoria	3
		long	longue	lang	larga		4
		very long	très longue	sehr lang	muy larga		5
11.	**(*)**	**QN VG**	**(b)**				
		Petiole: intensity of anthocyanin coloration	**Pétiole : intensité de la pigmentation anthocyanique**	**Blattstiel: Intensität der Anthocyanfärbung**	**Pecíolo: intensidad de la pigmentación antociánica**		
		absent or weak	nulle ou faible	fehlend oder gering	ausente o débil	Doña Aurelia, Gran Victoria	1
		weak to medium	faible à moyenne	gering bis mittel	débil a media		2
		medium	moyenne	mittel	media	Sevangel	3
		medium to strong	moyenne à forte	mittel bis stark	media a fuerte		4
		strong	forte	stark	fuerte	Ladda 1	5

	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
12.	**PQ VG**	**(c)**				
	Plant: sex	**Plante: sexe**	**Pflanze: Geschlecht**	**Planta: sexo**		
	mainly male	principalement mâle	überwiegend männlich	principalmente masculino	ALJC-X1	1
	female	femelle	weiblich	femenino	Doña Aurelia, Gran Victoria	2
	mainly female	principalement femelle	überwiegend weiblich	principalmente femenino		3
	mainly hermaphrodite	principalement hermaphrodite	überwiegend zwittrig	principalmente hermafrodita		4
13.	**PQ VG**	**(+) (c)**				
	Female flower: shape of sepal	**Fleur femelle : forme du sépale**	**Weibliche Blüte: Form des Kelchblatts**	**Flor femenina: forma del sépalo**		
	elliptic	elliptique	elliptisch	elíptica	ALJC-01	1
	medium ovate	ovale moyen	mittel eiförmig	oval media		2
	broad ovate	ovale large	breit eiförmig	oval ancha		3
	triangular	triangulaire	dreieckig	triangular		4
14.	**QN MS/VG**	**(c)**				
	Female flower: length of petal	**Fleur femelle : longueur du pétale**	**Weibliche Blüte: Länge des Blütenblatts**	**Flor femenina: longitud del pétalo**		
	short	courte	kurz	corta	Gran Victoria	1
	short to medium	courte à moyenne	kurz bis mittel	corta a media		2
	medium	moyenne	mittel	media	Doña Aurelia	3
	medium to long	moyenne à longue	mittel bis lang	media a larga		4
	long	longue	lang	larga	Don Rafael	5
15.	**QN MS/VG**	**(c)**				
	Female flower: width of petal	**Fleur femelle : largeur du pétale**	**Weibliche Blüte: Breite des Blütenblatts**	**Flor femenina: anchura del pétalo**		
	narrow	étroite	schmal	estrecha	Doña Aurelia	1
	narrow to medium	étroite à moyenne	schmal bis mittel	estrecha a media		2
	medium	moyenne	mittel	media	Don Rafael	3
	medium to broad	moyenne à large	mittel bis breit	media a ancha		4
	broad	large	breit	ancha	Ladda 1	5

	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
16.	**QN MS/VG**	**(c)**				
	Female flower: ratio length/width of petal	**Fleur femelle : rapport longueur/largeur du pétale**	**Weibliche Blüte: Verhältnis Länge/Breite des Blütenblatts**	**Flor femenina: relación longitud/anchura del pétalo**		
	low	bas	klein	baja	Don Rafael	1
	low to medium	bas à moyen	klein bis mittel	baja a media		2
	medium	moyen	mittel	media	ALJC-01, Gran Victoria	3
	medium to high	moyen à élevé	mittel bis groß	media a alta		4
	high	élevé	groß	alta	Doña Aurelia	5
17.	**PQ VG**	**(c)**				
	Female flowers: color of petal	**Fleurs femelles : couleur du pétale**	**Weibliche Blüten: Farbe des Blütenblatts**	**Flores femeninas: color del pétalo**		
	light green	vert clair	hellgrün	verde claro	ALJC-01, Gran Victoria	1
	medium green	vert moyen	mittelgrün	verde medio		2
	dark green	vert foncé	dunkelgrün	verde oscuro		3
	red	rouge	rot	rojo	Ladda 1	4
18.	**PQ VG**	**(+)**				
	Immature fruit: color	**Fruit immature : couleur**	**Unreife Frucht: Farbe**	**Fruto inmaduro: color**		
	light green	vert clair	hellgrün	verde claro	Sevangel	1
	medium green	vert moyen	mittelgrün	verde medio	ALJC-01	2
	dark green	vert foncé	dunkelgrün	verde oscuro	Gran Victoria	3
	red	rouge	rot	rojo	Ladda 1	4
19. **(*)**	**QN MS/VG**	**(d)**				
	Fruit: length	**Fruit : longueur**	**Frucht: Länge**	**Fruto: longitud**		
	very short	très courte	sehr kurz	muy corta		1
	very short to short	très courte à courte	sehr kurz bis kurz	muy corta a corta		2
	short	courte	kurz	corta	Sevangel	3
	short to medium	courte à moyenne	kurz bis mittel	corta a media		4
	medium	moyenne	mittel	media	ALJC-01	5
	medium to long	moyenne à longue	mittel bis lang	media a larga		6
	long	longue	lang	larga	Gran Victoria	7
	long to very long	longue à très longue	lang bis sehr lang	larga a muy larga		8
	very long	très longue	sehr lang	muy larga		9

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
20.		**QN MS/VG**	**(d)**				
		Fruit: width	**Fruit : largeur**	**Frucht: Breite**	**Fruto: anchura**		
		very narrow	très étroite	sehr schmal	muy estrecha		1
		very narrow to narrow	très étroit à étroite	sehr schmal bis schmal	muy estrecha a estrecha		2
		narrow	étroite	schmal	estrecha	Sevangel	3
		narrow to medium	étroite à moyenne	schmal bis mittel	estrecha a media		4
		medium	moyenne	mittel	media	Don Rafael	5
		medium to broad	moyenne à large	mittel bis breit	media a ancha		6
		broad	large	breit	ancha		7
		broad to very broad	large à très large	breit bis sehr breit	ancha a muy ancha		8
		very broad	très large	sehr breit	muy ancha		9
21.		**QN MS/VG**	**(d)**				
		Fruit: ratio length/width	**Fruit : rapport longueur/largeur**	**Frucht: Verhältnis Länge/Breite**	**Fruto: relación longitud/anchura**		
		very low	très bas	sehr klein	muy baja		1
		very low to low	très bas à bas	sehr klein bis klein	muy baja a baja		2
		low	bas	klein	baja	Gran Victoria	3
		low to medium	bas à moyen	klein bis mittel	baja a media		4
		medium	moyen	mittel	media	ALJC-01	5
		medium to high	moyen à élevé	mittel bis groß	media a alta		6
		high	élevé	groß	alta	Sevangel	7
		high to very high	élevé à très élevé	groß bis sehr groß	alta a muy alta		8
		very high	très élevé	sehr groß	muy alta		9
22.	**(*)**	**QN MS/VG**	**(+) (d)**				
		Fruit: thickness of pericarp	**Fruit : épaisseur du péricarpe**	**Frucht: Dicke des Perikarps**	**Fruto: grosor del pericarpio**		
		very thin	très mince	sehr dünn	muy delgado		1
		thin	mince	dünn	delgado	Doña Aurelia	2
		medium	moyenne	mittel	medio	ALJC-01	3
		thick	épaisse	dick	grueso		4
		very thick	très épaisse	sehr dick	muy grueso		5

	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
23. (*)	**QN MS/VG**	**(d)**				
	Fruit: length of peduncle	**Fruit : longueur du pédoncule**	**Frucht: Länge des Blütenstiels**	**Fruto: longitud del pedúnculo**		
	very short	très courte	sehr kurz	muy corta		1
	short	courte	kurz	corta	Doña Aurelia, Gran Victoria	2
	medium	moyenne	mittel	media	ALJC-01, Sevangel	3
	long	longue	lang	larga		4
	very long	très longue	sehr lang	muy larga		5
24. (*)	**QN MS/VG**	**(+) (d)**				
	Seed: length	**Graine : longueur**	**Samen: Länge**	**Semilla: longitud**		
	short	courte	kurz	corta	Ladda 1	1
	short to medium	courte à moyenne	kurz bis mittel	corta a media		2
	medium	moyenne	mittel	media	Gran Victoria, Sevangel	3
	medium to long	moyenne à longue	mittel bis lang	media a larga		4
	long	longue	lang	larga	Don Rafael	5
25.	**QN MS/VG**	**(+) (d)**				
	Seed: width	**Graine : largeur**	**Samen: Breite**	**Semilla: anchura**		
	narrow	étroite	schmal	estrecha	Ladda 1, Sevangel	1
	narrow to medium	étroite à moyenne	schmal bis mittel	estrecha a mediana		2
	medium	moyenne	mittel	media	Don Rafael, Gran Victoria	3
	medium to broad	moyenne à large	mittel bis breit	media a ancha		4
	broad	large	breit	ancha		5
26.	**QN MS/VG**	**(d)**				
	Seed: ratio length/width	**Graine : rapport longueur/largeur**	**Samen: Verhältnis Länge/Breite**	**Semilla: relación longitud/anchura**		
	low	bas	klein	baja	Gran Victoria	1
	low to medium	bas à moyen	klein bis mittel	baja a media		2
	medium	moyen	mittel	media	ALJC-X1, Don Rafael	3
	medium to high	moyen à élevé	mittel bis groß	media a alta		4
	high	élevé	groß	alta	Sevangel	5
27.	**PQ VG**	**(+) (d)**				
	Seed: shape	**Graine : forme**	**Samen: Form**	**Semilla: forma**		
	elliptic	elliptique	elliptisch	elíptica	ALJC-01, Gran Victoria	1
	oblong	oblongue	rechteckig	oblonga	Doña Aurelia, Ladda 1	2
	obovate	oboval	verkehrt eiförmig	oboval		3

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
28.		**QN MS/VG**	**(+) (d)**				
		Seed: thickness	**Graine : épaisseur**	**Samen: Dicke**	**Semilla: grosor**		
		thin	mince	dünn	delgado	Ladda 1	1
		thin to medium	mince à moyenne	dünn bis mittel	delgado a medio		2
		medium	moyenne	mittel	medio	Doña Aurelia, Gran Victoria	3
		medium to thick	moyenne à épaisse	mittel bis dick	medio a grueso		4
		thick	épaisse	dick	grueso		5
29.		**QN MG**	**(+) (d)**				
		Endocarp: intensity of brown color	**Endocarpe : intensité de la couleur brune**	**Endokarp: Intensität der Braunfärbung**	**Endocarpio: intensidad del color marrón**		
		light	claire	hell	clara	Gran Victoria	1
		medium	moyenne	mittel	media	Ladda 1	2
		dark	foncée	dunkel	oscura	Don Rafael, Doña Aurelia	3
30.	**(*)**	**QL VG**		**(d)**			
		Endocarp: glossiness	**Endocarpe : brillance**	**Endokarp: Glanz**	**Endocarpio: brillo**		
		absent	absente	fehlend	ausente	Doña Aurelia, Gran Victoria, Sevangel	1
		present	présente	vorhanden	presente	ALJC-01, Don Rafael	9

8. Explanations on the Table of Characteristics

8.1 Explanations covering several characteristics

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

(a) Observations should be made on mature leaves taken from the middle third of the current's season's shoot.

(b) Observations should be made on mature leaves taken from the middle third of the current shoot and attached adjacent to the inflorescence.

(c) Observations should be made at the first flowering.

(d) Observations should be made on mature fruits taken from the middle part of the fruiting area.

8.2 Explanations for individual characteristics

Ad. 1: Tree: growth habit

1
upright

2
semi upright

3
spreading

Ad. 2: Young leaf blade: intensity of anthocyanin coloration

Observations should be made on the upper third of current season's shoots during active growth (flush).

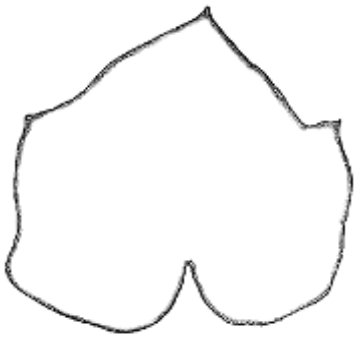
Ad. 6: Leaf blade: shape of base

Observations should be made on the base of the cordate leaf.

1
rounded

2
straight

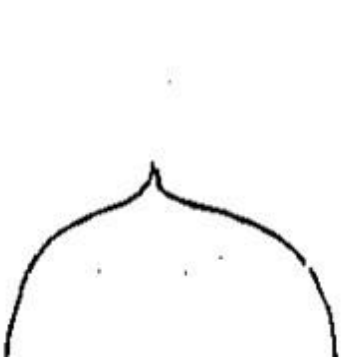
Ad. 7: Leaf blade: serration on margin



1
absent

9
present

Ad. 8: Leaf blade: shape of tip

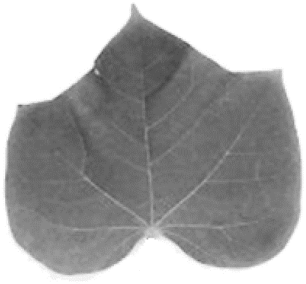


1
apiculate

2
acuminate

Ad. 9: Leaf blade: number of lobes

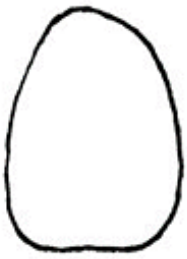
1
one



2
three

3
more than three

Ad. 13: Female flower: shape of sepal

	← lateral outline →		
position of broadest part	rounded		linear
at middle	 1 elliptic		
below middle	 2 medium ovate	 3 broad ovate	 4 triangular

Ad. 18: Immature fruit: color

Observations should be made on the middle part of the fruiting area just before fruit maturity.

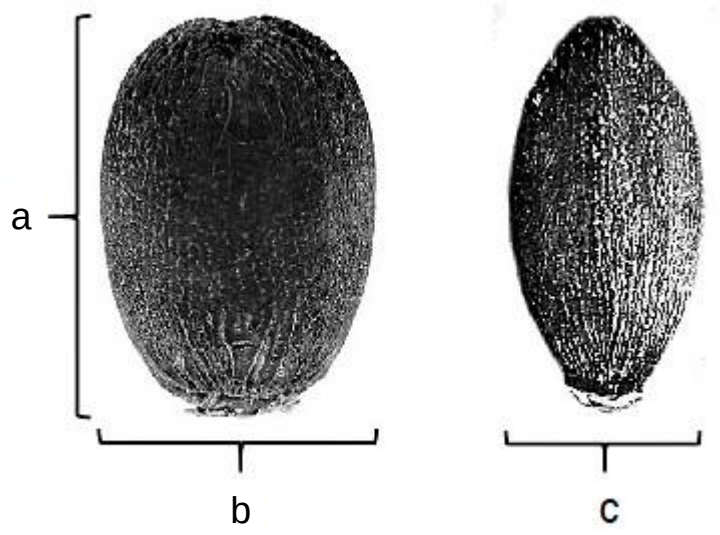
Ad. 22: Fruit: thickness of pericarp

1
very thin

3
medium

5
very thick

Ad. 24: Seed: length



a = Seed: length
b = Seed: width
c = Seed: thickness

Ad. 25: Seed: width

See Ad. 24.

Ad. 27: Seed: shape

	← broadest part →	
relative width	at middle	above middle
narrow	 2 oblong	
medium	 1 elliptic	 3 obovate

Ad. 28: Seed: thickness

See Ad. 24.

Ad. 29: Endocarp: intensity of brown color

The intensity of brown color should be assessed as the overall brown color of the endocarp surface.

9. Literature

Avendaño-Arzate, C.H., Zamarripa-Colmenero, A. 2012: Guía gráfica de descriptores varietales de piñón mexicano (*Jatropha curcas* L.) Publicación Especial Núm. 1. Instituto Nacional de Investigaciones Forestales, Agrícolas y Pecuarias. Campo Experimental, Tuxtla Chico, Chiapas, MX. 76 pp.

Barrientos Priego, A., Córdova Téllez, L. Zamarripa Colmanero, A., Avendaño Arrazate, C.H. 2014: Guía técnica para la descripción varietal de jatropha (*Jatropha curcas* L.). Servicio Nacional de Inspección y Certificación de Semillas, Secretaría de Agricultura, Ganadería, Desarrollo Rural, Pesca y alimentación. Tlalnepantla, Estado de México, MX. 19 p.

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	*Jatropha curcas* L.
1.2	Common name	Physic 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 variety)

(……..……..…) 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 Seed-propagated varieties

(a) Self-pollination [ ]
(b) Cross-pollination [ ]
(i) Population [ ]
(c) Hybrid [ ]
(d) Other (please provide details) [ ]

4.2.2 Vegetative propagation

(a) Cuttings [ ]
(b) Other (state method) [ ]

4.2.3 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 blade: length**		
	very short		1 [ ]
	very short to short		2 [ ]
	short	ALJC-X1	3 [ ]
	short to medium		4 [ ]
	medium	Don Rafael	5 [ ]
	medium to long		6 [ ]
	long		7 [ ]
	long to very long		8 [ ]
	very long		9 [ ]
5.2 (7)	**Leaf blade: serration on margin**		
	absent	ALJC-01, Doña Aurelia	1 [ ]
	present		9 [ ]
5.3 (9)	**Leaf blade: number of lobes**		
	one		1 [ ]
	three	Doña Aurelia, Gran Victoria	2 [ ]
	more than three		3 [ ]
5.4 (10)	**Petiole: length**		
	very short		1 [ ]
	short	ALJC-X1	2 [ ]
	medium	ALJC-01, Gran Victoria	3 [ ]
	long		4 [ ]
	very long		5 [ ]
5.5 (11)	**Petiole: intensity of anthocyanin coloration**		
	absent or weak	Doña Aurelia, Gran Victoria	1 [ ]
	weak to medium		2 [ ]
	medium	Sevangel	3 [ ]
	medium to strong		4 [ ]
	strong	Ladda 1	5 [ ]

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

	Characteristics	Example Varieties	Note
5.6 (19)	**Fruit: length**		
	very short		1 [ ]
	very short to short		2 [ ]
	short	Sevangel	3 [ ]
	short to medium		4 [ ]
	medium	ALJC-01	5 [ ]
	medium to long		6 [ ]
	long	Gran Victoria	7 [ ]
	long to very long		8 [ ]
	very long		9 [ ]
5.7 (22)	**Fruit: thickness of pericarp**		
	very thin		1 [ ]
	thin	Doña Aurelia	2 [ ]
	medium	ALJC-01	3 [ ]
	thick		4 [ ]
	very thick		5 [ ]
5.8 (23)	**Fruit: length of peduncle**		
	very short		1 [ ]
	short	Doña Aurelia, Gran Victoria	2 [ ]
	medium	ALJC-01, Sevangel	3 [ ]
	long		4 [ ]
	very long		5 [ ]
5.9 (24)	**Seed: length**		
	short	Ladda 1	1 [ ]
	short to medium		2 [ ]
	medium	Gran Victoria, Sevangel	3 [ ]
	medium to long		4 [ ]
	long	Don Rafael	5 [ ]
5.10 (30)	**Endocarp: glossiness**		
	absent	Doña Aurelia, Gran Victoria, Sevangel	1 [ ]
	present	ALJC-01, Don Rafael	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	*Seed: length*	*short*	*long*

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]