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INTERNATIONAL UNION FOR THE PROTECTION OF NEW VARIETIES OF PLANTS
GENEVA

DRAFT

**CACTUS PEAR
and
XOCONOSTLES**

Opuntia spp., Groups 1 & 2

*

GUIDELINES

FOR THE CONDUCT OF TESTS

FOR DISTINCTNESS, UNIFORMITY AND STABILITY

*to be considered by the Technical Committee at its fortieth session,
to be held in Geneva, Switzerland, from March 29 to 31, 2004*

Alternative Names:*

<i>Latin</i>	<i>English</i>	<i>French</i>	<i>German</i>	<i>Spanish</i>
<i>Opuntia</i> , Group 1	Cactus pear, Prickly pear	Figuier de Barbarie	Feigenkaktus	Chumbera, Nopal tunero, Tuna
<i>Opuntia</i> , Group 2	Xonocostles	Xonocostles	Xonocostles	Xonocostles

ASSOCIATED DOCUMENTS

These guidelines should be read in conjunction with document TG/1/3, “General Introduction to the Examination of Distinctness, Uniformity and Stability and the Development of Harmonized Descriptions of New Varieties of Plants” (hereinafter referred to as 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.]

<u>TABLE OF CONTENTS</u>	<u>PAGE</u>
1. SUBJECT OF THESE TEST GUIDELINES	3
2. MATERIAL REQUIRED	3
3. METHOD OF EXAMINATION.....	3
3.1 Duration of Tests.....	3
3.2 Testing Place.....	4
3.3 Conditions for Conducting the Examination.....	4
3.4 Test Design	4
3.5 Number of Plants / Parts of Plants to be Examined.....	4
3.6 Additional Tests	4
4. ASSESSMENT OF DISTINCTNESS, UNIFORMITY AND STABILITY.....	4
4.1 Distinctness	4
4.1.1 General Recommendations	4
4.1.2 Consistent Differences	4
4.1.3 Clear Differences.....	4
4.2 Uniformity.....	5
4.3 Stability	5
5. GROUPING OF VARIETIES AND ORGANIZATION OF THE GROWING TRIAL	5
6. INTRODUCTION TO THE TABLE OF CHARACTERISTICS	6
6.1 Categories of Characteristics.....	6
6.1.1 Standard Test Guidelines Characteristics	6
6.1.2 Asterisked Characteristics	6
6.2 States of Expression and Corresponding Notes.....	6
6.3 Types of Expression.....	6
6.4 Example Varieties	6
6.5 Legend.....	6
7. TABLE OF CHARACTERISTICS	7
8. EXPLANATIONS ON THE TABLE OF CHARACTERISTICS	7
8.1 Explanations covering several characteristics	23
8.2 Explanations for individual characteristics	24
9. LITERATURE	30
10. TECHNICAL QUESTIONNAIRE.....	32

1. Subject of these Test Guidelines

These Test Guidelines apply to all varieties of the following *Opuntia* groups and species (*Cactaceae*):

Group 1: Cactus Pear

Opuntia amyclaea Tenore, *O. ficus-indica* (L.) Mill., *O. streptacantha* Lemaire, *O. megacantha* Salm-Dyck, *O. duranguensis* Britton et Rose, *O. lasiacantha* Pfeiffer, *O. robusta* Wendland, *O. hyptiacantha* Weber

Group 2: Xoconostles

Opuntia joconostle Weber, *O. matudae* Sheinvar, *O. oligacantha* Shienvar, *O. leucotricha* DC, *O. heliabravoana* Sheinvar, *O. spinulifera* Sheinvar

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 three-year-old plants or, if accepted by the competent authority, branches including three successive cladodes.

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

5 three-year old plants, or if accepted by the competent authority,

7 branches which include 3 successive cladodes,
each sufficient to propagate 5 plants.

2.4 The plant material supplied should be visibly healthy, not lacking in vigor, nor affected by any important pest or disease. It should preferably not be obtained from *in vitro* propagation.

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 *Duration of Tests*

The minimum duration of tests should normally be two independent growing cycles.

3.2 *Testing Place*

The tests should normally be conducted at one place. If any characteristics of the variety, which are relevant for the examination of DUS, cannot be observed at that place, the variety may be tested at an additional place.

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

3.4 *Test Design*

3.4.1 Each test should be designed to result in a total of, at least 5 plants.

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 Plants / Parts of Plants to be Examined*

Unless otherwise indicated, all observations on single plants should be made on 5 plants or 2 parts taken from each of 5 plants. In particular, observation on fruit characteristics should be made on 20 fruits.

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 minimum duration of tests recommended in section 3.1 reflects, in general, the need to ensure that any differences in a characteristic are sufficiently consistent.

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 is 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) Cladode: color of areoles (characteristic 14);
- (b) Fruit: thickness of peel (characteristic 44);
- (c) Seed: size (characteristic 54);
- (d) Flowering habit (characteristic 59);
- (e) Time of harvest maturity (characteristic 60).

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 Section 6.1.2

(QL) Qualitative characteristic – see Section 6.3

(QN) Quantitative characteristic – see Section 6.3

(PQ) Pseudo-Qualitative characteristic – see Section 6.3

(a)–(e) See Explanations on the Table of Characteristics in Section 8.1

(+) See Explanations on the Table of Characteristics in Section 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.	Plant: growth habit	Plante: port	Pflanze: Wuchsform	Planta: porte		
(+)						
PQ	upright	dressé	aufrecht	erecto	Cardón	1
	spreading	étalé	breitwüchsig	abierto	Chapeada, Cristalina	2
	decumbent	décombant	niederliegend	decumbente	Pabellón, Rojo Pelón	3
	drooping	retombant	überhängend	colgante	Sanjuanera	4
2.	Plant: height	Plante: hauteur	Pflanze: Höhe	Planta: altura		
QN	short	basse	kurz	baja	Pico Chulo, Torreja	3
	medium	moyenne	mittel	media	Esmeralda, Rojo Vigor	5
	tall	haute	hoch	alta	Oreja de Elefante	7
3.	Plant: width	Plante: largeur	Pflanze: Breite	Planta: anchura		
QN	narrow	étroite	schmal	estrecha	Copena F-1, Rojo Lirio	3
	medium	moyenne	mittel	media	Cristalina, Esmeralda	5
	broad	large	breit	ancha	Montesa, Reyna	7
4.	Cladode: length	Cladode: longueur	Kladodium: Länge	Cladodio: longitud		
(+)						
QN (a)	short	courte	kurz	corta	Pico Chulo, Sanjuanera, Tapón de Mayo	3
	medium	moyenne	mittel	media	Rojo Pelón, Tapón Aguanoso	5
	long	longue	lang	larga	Cristalina, Sangre de Toro	7

English	français	deutsch	español	Example Varieties	Note/ Nota
				Exemples Beispielssorten Variedades ejempl	
5.	Cladode: width	Cladode: largeur	Kladodium: Breite	Cladodio: anchura	
(+)					
QN	(a) narrow	étroite	schmal	estrecha	Pico Chulo, Rojo Lirio 3
	medium	moyenne	mittel	media	Milpa Alta, Cristalina 5
	broad	large	breit	ancha	Oreja de Elefante 7
6.	Cladode: length/width ratio	Cladode: rapport longueur/largeur	Kladodium: Verhältnis Länge/Breite	Cladodio: relación longitud/anchura	
QN	(a) small	petit	klein	pequeña	Oreja de Elefante, Rojo Pelón 3
	medium	moyen	mittel	media	Miquihuana, Villanueva 5
	large	grand	groß	grande	Copena T-3, Reyna 7
7.	Cladode: shape	Cladode: forme	Kladodium: Form	Cladodio: forma	
(*)					
(+)					
PQ	(a) lanceolate	lancéolée	lanzettlich	lanceolado	Copena F-1, Tlaconopal 1
	oblong	oblongue	rechteckig	oblongo	Ixtapa 2
	elliptic	elliptique	elliptisch	elíptico	Milpa Alta 3
	circular	circulaire	kreisförmig	circular	Tapón Aguanoso 4
	rhombic	losangique	rautenförmig	romboidal	Atlixco, Trompa de Cochino 5
	narrow obovate	obovale étroite	schmal verkehrt eiförmig	estrecho obovado	Rubí Reyna 6
	obovate	obovale	verkehrt eiförmig	obovado	Fafayuca 7

					Example Varieties	
	English	français	deutsch	español	Exemples	Note/ Nota
					Beispielssorten	
8. (*)	Cladode: thickness	Cladode: épaisseur	Kladodium: Dicke	Cladodio: grosor		
QN	(a) thin	fine	dünn	delgado	Burrona, Copena T-2, Montesa	3
	medium	moyenne	mittel	medio	Memelo	5
	thick	épaisse	dick	grueso	Pico Chulo, Rubí Reyna	7
9.	Cladode: color	Cladode: couleur	Kladodium: Farbe	Cladodio: color		
PQ	(a) yellow green	vert jaunâtre	gelbgrün	verde amarillento	Cristalina, Reyna, Rojo Pelón	1
	light green	vert clair	hellgrün	verde claro	Milpa Alta	2
	medium green	vert moyen	mittelgrün	verde medio	Blanca Pepina	3
	dark green	vert foncé	dunkelgrün	verde oscuro	Morado Jalpa, Roja San Martín	4
	bluish green	vert bleuâtre	bläulichgrün	verde azulado	Tapón de Mayo	5
10.	Cladode: waxiness	Cladode: pruine	Kladodium: Wachsschicht	Cladodio: cerosidad		
QN	(a) very weak	très faible	sehr gering	muy débil	Tlaconopal	1
	weak	faible	gering	débil	Copena T-5	3
	moderate	moyenne	mäßig	moderada	Cristalina	5
	strong	forte	stark	fuerte	Copo de Nieve	7
11.	Cladode: pubescence of surface	Cladode: pilosité de la surface	Kladodium: Behaarung der Oberfläche	Cladodio: pubescencia de la superficie		
QL	(a) absent	absente	fehlend	ausente	Milpa Alta	1
	present	présente	vorhanden	presente	Cuaresmeño, Valterrilla	9

					Example Varieties	
	English	français	deutsch	español	Exemples	Note/ Nota
					Beispielssorten	
12.	Cladode: undulation of margin	Cladode: ondulation du bord	Kladodium: Randwellung	Cladodio: ondulación del margen		
QL	(a) absent	absente	fehlend	ausente	Reyna	1
	present	présente	vorhanden	presente	Bola de Masa, Oreja de Elefante	9
13.	Cladode: number of areoles in central row	Cladode: nombre d'aréoles dans la rangée centrale	Kladodium: Anzahl Areolen in der mittleren Reihe	Cladodio: número de aréolas en la hilera central		
QN	(a) few	faible	gering	bajo	Cristalina, Pico Chulo, Tapón de Mayo	3
	(b) medium	moyen	mittel	medio	Amarillo Plátano, Copena T-2, Rubí Reyna	5
	many	important	groß	alto	Cardona, Charola, Reyna	7
14. (*)	Cladode: color of areoles	Cladode: couleur des aréoles	Kladodium: Farbe der Areolen	Cladodio: color de las aréolas		
PQ	(a) grey	gris	grau	gris	Milpa Alta, Reyna	1
	(b) yellow brown	marron jaune	gelbbraun	marrón amarillento	Burrona	2
	brown	marron	braun	marrón	Chaveña	3
	black	noir	schwarz	negro	Cardona	4
15. (*)	Cladode: number of spines per areole	Cladode: nombre d'épines par aréole	Kladodium: Anzahl Stacheln pro Areole	Cladodio: número de espinas por aréola		
QN	(a) none or very few	aucune ou très rares	keine oder sehr gering	ninguna o muy bajo	Pabellón, Rojo Pelón, Rojo Vigor	1
	(b) few	rares	gering	bajo	Rojo Lirio, Rojo San Martín	3
	medium	moyennes	mittel	medio	Cristalina, Esmeralda, Torrejoa	5
	many	nombreuses	groß	alto	Sanjuanera, Villanueva	7
	very many	très nombreuses	sehr groß	muy alto	Reyna	9

	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejempl	Note/ Nota
16.	Cladode: length of longest spine	Cladode: longueur de l'épine la plus longue	Kladodium: Länge des längsten Stachels	Cladodio: longitud de la espina más larga		
QN	(a) short	courte	kurz	corta	Memelo, Pico Chulo	3
	(b) medium	moyenne	mittel	media	Fafayuca, Rubí Reyna	5
	long	longue	lang	larga	Tapón Aguanoso	7
17.	Spine: main color	Épine: couleur principale	Stachel: Hauptfarbe	Espina: color principal		
PQ	(a) grey	gris	grau	gris	Cardón	1
	(b) white	blanc	weiß	blanco	Reyna	2
	yellow	jaune	gelb	amarillo	Duraznillo, Tapón	3
	brown	marron	braun	marrón	Rosa de Castilla, San Pedreña	4
18.	Spine: number of colors	Épine: nombre de couleurs	Stachel: Anzahl Farben	Espina: número de colores		
QL	(a) one	une	eine	uno	Reyna, Rosa de Castilla, Tapón Aguanoso	1
	(b) two	deux	zwei	dos	Cardona, Chapeado, Cristalina	2
19.	Spine: surface	Épine: surface	Stachel: Oberfläche	Espina: superficie		
(+)						
PQ	(a) smooth	lisse	glatt	lisa	Amarillo	1
	(b) grooved	canelée	gerieft	acanalada	Reyna	2
	prickled	épineuse	beborstet	con púas	Tapón Aguanoso	3

	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejempl	Note/ Nota
20.	Central spine: attitude (+)	Aiguillon central: port	Zentraler Stachel: Haltung	Espina central: porte		
QN	(a) erect	érigé	aufrecht	erecto	Fafayuca	1
	(b) semi-erect	semi-érigé	halbaufrecht	semierecto	Tuna Morada II	3
	horizontal	horizontal	waagerecht	horizontal	Cardón	5
21.	Central spine: flexibility	Aiguillon central: flexibilité	Zentraler Stachel: Biegsamkeit	Espina central: flexibilidad		
PQ	(a) flexible	souple	biegsam	flexible	Cristalina	1
	(b) firm	ferme	fest	firme	Reyna	2
	brittle	fragile	zerbrechlich	quebradiza	Burrona	3
22.	Central spine: curvature (excluding base) (+)	Aiguillon central: courbure (sauf la base)	Zentraler Stachel: Biegung (ohne Basis)	Espina central: curvatura (excluida la base)		
PQ	(a) absent	absente	fehlend	ausente	Burra, Sanjuanera	1
	(b) present	présente	vorhanden	presente	Cardón de Castilla	9
23.	Central spine: twisting (+)	Aiguillon central: torsion	Zentraler Stachel: Verdrehung	Espina central: torsión		
QL	(a) absent	absente	fehlend	ausente	Burra, Burrona	1
	(b) present	présente	vorhanden	presente	Rubí Reyna, Sanjuanera	9
24.	Central spine: shape in dorsal view	Aiguillon central: forme en vue dorsale	Zentraler Stachel: Form in der dorsalen Ansicht	Espina central: forma en vista dorsal		
QL	(a) aciculate	aciculaire	nadelförmig	aciculiforme	Burra, Cuaresmeño	1
	(b) narrow triangular	triangulaire étroite	schmal dreieckig	triangular estrecha	Montesa	2

					Example Varieties	
	English	français	deutsch	español	Exemples	Note/ Nota
					Beispielssorten	
25.	Central spine: shape in cross section	Aiguillon central: forme en vue transversale	Zentraler Stachel: Form im Querschnitt	Espina central: forma en la sección transversal		
PQ	(a) elliptic	elliptique	elliptisch	elíptica	Amarilla	1
	(b) circular	circulaire	rund	circular	Montesa	2
	triangular	triangulaire	dreieckig	triangular	Pachón	3
26.	Cladode: presence of glochides	Cladode: présence de glochides	Kladodium: Vorhandensein von Widerhähkchen	Cladodio: presencia de glóquidas		
(*)						
QN	(a) absent or very few	absentes ou très rares	fehlend oder sehr wenige	ausentes o muy pocas	Rojo Pelón	1
	(b) few	rares	wenige	pocas	Reyna	2
	many	nombreuses	viele	abundantes	Montesa, Tuna Mantequilla	3
27.	Cladode: color of glochides	Cladode: couleur des glochides	Kladodium: Farbe der Widerhähkchen	Cladodio: color de las glóquidas		
PQ	(a) yellow	jaune	gelb	amarillo	Tapón Aguanoso	1
	(b) brown	marron	braun	marrón	Cristalina, Reyna, Rojo Pelón	2
28.	Cladode: number of flowers	Cladode: nombre de fleurs	Kladodium: Anzahl Blüten	Cladodio: número de flores		
QN	(a) few	faible	gering	bajo	Copena Z-1, Fafayuca	3
	medium	moyen	mittel	medio	Cuaresmeño, Memelo	5
	many	élevé	groß	alto	Villanueva	7
29.	Flower: length	Fleur: longueur	Blüte: Länge	Flor: longitud		
(+)						
QN	(c) short	courte	kurz	corta	Copena Z-1, Pico Chulo	3
	medium	moyenne	mittel	media	Burrona, Colorada	5
	long	longue	lang	larga	Mango, Sanjuanera	7

	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejempl	Note/ Nota
30. <small>(*)</small>	Flower: color of perianth	Fleur: couleur du périanthe	Blüte: Farbe der Blütenhülle	Flor: color del perianto		
PQ (c)	greenish yellow	jaune verdâtre	grünlichgelb	amarillo verdoso	Cardón, Duraznillo	1
	yellow	jaune	gelb	amarillo	Tapón Macho	2
	brownish yellow	jaune brunâtre	bräunlichgelb	amarillo café	Rojo Pelón	3
	orange	orange	orange	anaranjado	Chapeada, Reyna	4
	orange red	rouge orangé	orangerot	rojo anaranjado	Roja San Martín, Tuna Rosa	5
31. <small>(*) (+)</small>	Flower: color of style	Fleur: couleur du style	Blüte: Farbe des Griffels	Flor: color del estilo		
PQ (c)	green	vert	grün	verde	Duraznillo	1
	white	blanc	weiß	blanco	Montesa, Tapón de Mayo	2
	yellow	jaune	gelb	amarillo	Cardón Aguanoso	3
	pink	rose	rosa	rosa	Morada, Pico Chulo	4
	red	rouge	rot	rojo	Pabellón, Rojo Pelón	5
32. <small>(+)</small>	Flower: number of stigma lobes	Fleur: nombre de lobes du stigmate	Blüte: Anzahl Narbenlappen	Flor: número de lóbulos del estigma		
QN (c)	few	faible	gering	bajo	Atlixco, Burrona Larga	3
	medium	moyen	mittel	medio	Rubí Reyna, Villanueva	5
	many	élevé	groß	alto	Naranjón Legítimo	7

	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplar	Note/ Nota
33. (+)	Flower: color of stigma lobe	Fleur: couleur du lobe du stigmate	Blüte: Farbe des Narbenlappens	Flor: color del lóbulo del estigma		
QL	(c) yellow	jaune	gelb	amarillo	Morada Jalpa	1
	green	vert	grün	verde	Cristalina, Reyna	2
34. (*)	Fruit: length	Fruit: longueur	Frucht: Länge	Fruto: longitud		
QN	(d) short	courte	kurz	corta	Amarilla Santa Inés, Sangre de Toro	3
	medium	moyenne	mittel	media	Fafayuca, Reyna	5
	long	longue	lang	larga	Burrona, Cristalina	7
35. (*)	Fruit: maximum diameter	Fruit: diamètre maximum	Frucht: maximaler Durchmesser	Fruto: diámetro máximo		
QN	(d) narrow	étroit	schmal	estrecho	Cambray, Memelo	3
	medium	moyen	mittel	medio	Reyna, Solferino	5
	broad	large	breit	ancho	Burrona, Cristalina, Tapón de Mayo	7
36.	Fruit: ratio length/maximum diameter	Fruit: rapport longueur/diamètre maximum	Frucht: Verhältnis Länge/maximaler Durchmesser	Fruto: relación longitud/diámetro máximo		
QN	(d) small	faible	klein	pequeña	Rojo Papas, Tapón de Mayo	3
	(e) medium	moyen	mittel	media	Burrona, Concha de Oro	5
	large	important	groß	grande	Amarilla Plátano, Montesa	7

	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplar	Note/ Nota
37.	Fruit: shape	Fruit: forme	Frucht: Form	Fruto: forma		
(+)						
PQ	(d) oblong	oblongue	rechteckig	oblonga	Copena 17, Torreja	1
	narrow elliptic	elliptique étroite	schmal elliptisch	elíptica angosta	Rubí Reyna	2
	elliptic	elliptique	elliptisch	elíptica	Reyna	3
	circular	circulaire	kreisförmig	circular	Cardón	4
	oblanceolate	aplatie	breitrund	achatada	Tapón de Mayo	5
	ovate	obovale	verkehrt eiförmig	oboval	Roja Jalpa	6
38.	Fruit: density of areoles	Fruit: densité des aréoles	Frucht: Dichte der Areolen	Fruto: densidad de aréolas		
QN	(b) sparse	lâche	locker	baja	Cristalina, Rojo Jalpa	3
	(d) medium	moyenne	mittel	media	Montesa, Reyna	5
	dense	dense	dicht	alta	Rojo Lirio, Torreja	7
39.	Fruit: number of glochides	Fruit: nombre de glochides	Frucht Anzahl Widerhákchen	Fruto: número de glóquidas		
(*)						
QN	(b) few	faible	gering	bajo	Tapón de Mayo	3
	(d) medium	moyen	mittel	medio	Cristalina	5
	many	élevé	groß	alto	Montesa, Reyna, Rubí Reyna	7
40.	Fruit: color of glochides	Fruit: couleur des glochides	Frucht: Farbe der Widerhákchen	Fruto: color de las glóquidas		
(*)						
PQ	(b) yellow	jaune	gelb	amarillo	Blanca San José, Camueso, Tuna Mansa	1
	(d) brown	marron	braun	marrón	Amarilla, Amarilla San Nicolás, Pico Chulo, San Nicolás	2

	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplos	Note/ Nota
41.	Fruit: length of stalk (+)	Fruit: longueur du pédoncule	Frucht: Länge des Stiels	Fruto: longitud del pedúnculo		
QN	(d) short	courte	kurz	corta	Amarillo Plátano, Solferino	3
	medium	moyenne	mittel	media	Montesa, Pico Chulo	5
	long	longue	lang	larga	Cristalina	7
42.	Fruit: depression of receptacle scar (+)	Fruit: dépression de la cicatrice du réceptacle	Frucht: Einsenkung des Fruchtboden-ansatzes	Fruto: depresión de la cicatriz del receptáculo		
QN	(d) absent or slightly depressed	nulle ou légèrement déprimée	fehlend oder leicht eingesenkt	ausente o ligeramente deprimida	Reyna, Torreja	3
	moderately depressed	modérément déprimée	mäßig eingesenkt	moderadamente deprimida	Memelo, Pico Chulo	5
	strongly depressed	fortement déprimée	stark eingesenkt	fuertemente deprimida	Chapeada, Roja San Martín	7
43.	Fruit: diameter of receptacle scar	Fruit: diamètre de la cicatrice du réceptacle	Frucht: Durchmesser des Fruchtboden-ansatzes	Fruto: diámetro de la cicatriz del receptáculo		
QN	(d) small	petit	klein	pequeño	Copena 2, Tuna Rosa	3
	medium	moyen	mittel	medio	Amarillo Plátano, Cambray	5
	large	grand	groß	grande	Cristalina, Pico Chulo, Tapón de Mayo	7
44. (*)	Fruit: thickness of peel	Fruit: épaisseur de la peau	Frucht: Dicke der Schale	Fruto: espesor de la cáscara		
QN	(d) thin	fine	dünn	delgado	Amarilla San José, Montesa, Reyna	3
	(e) medium	moyenne	mittel	medio	Rojo Lirio, Rojo Pelón, Tapón de Mayo	5
	thick	épaisse	dick	grueso	Caidilla Legítima	7

English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
45. Fruit: weight of peel	Fruit: poids de la peau	Frucht: Gewicht der Schale	Fruto: peso de la cáscara		
QN (d) light	léger	leicht	ligero	Roja Suanjuanera, Tuna Rosa	3
medium	moyen	mittel	medio	Chapeada, Natalia	5
heavy	lourd	schwer	pesado	Montesa , Torrejoa	7
46. Fruit: weight of flesh	Fruit: poids de la chair	Frucht: Gewicht des Fleisches	Fruto: peso de la pulpa		
QN (d) very light	très léger	sehr leicht	muy ligero	Cambray, Cuaresmeño	1
light	léger	leicht	ligero	Morada, Zarca	3
medium	moyen	mittel	medio	Fafayuca, Solferino	5
heavy	lourd	schwer	pesado	Montesa, Rojo Pelón	7
very heavy	très lourd	sehr schwer	muy pesado	Burrona, Cristalina	9
47. Fruit: ratio of weight of flesh/peel	Fruit: rapport poids de la chair/poids de la peau	Frucht: Verhältnis Gewicht des Fleisches/ der Schale	Fruto: relación peso de la pulpa/peso de la cáscara		
QN (d) small	petit	klein	pequeña	Cardón, Trompa de Cochino	3
medium	moyen	mittel	media	Gavia, Tapón Aguanoso	5
large	grand	groß	grande	Blanca San José, Rojo Pelón	7
48. Fruit: evenness of color surface	Fruit: uniformité de la couleur de la surface	Frucht: Gleichmäßigkeit der Farboberfläche	Fruto: uniformidad del color de la superficie		
QL (d) even	uniforme	gleichmäßig	uniforme	Burrona, Cristalina	1
uneven	irrégulière	ungleichmäßig	irregular	Chapeado	2

					Example Varieties	
	English	français	deutsch	español	Exemples	Note/ Nota
					Beispielssorten	
49. <small>(*)</small>	Fruit: main color of surface	Fruit: couleur principale de la surface	Frucht: Hauptfarbe der Oberfläche	Fruto: color principal de la superficie		
PQ (d)	white	blanc	weiß	blanco	Blanca Platanillo	1
	light green	vert clair	hellgrün	verde claro	Gavia	2
	medium green	vert moyen	mittelgrün	verde medio	Esmeralda	3
	dark green	vert foncé	dunkelgrün	verde oscuro	Burrona, Reyna	4
	yellow	jaune	gelb	amarillo	Amarilla Plátano	5
	orange	orange	orange	anaranjado	Montesa, Pico Chulo	6
	pink	rose	rosa	rosa	Memelo	7
	medium red	rouge moyen	mittelrot	rojo medio	Rojo Pelón, Rubí Reyna	8
	dark red	rouge foncé	dunkelrot	rojo oscuro	Cardona	9
	purple	pourpre	purpurn	púrpura	Morada Jalpa, Roja San Martín, Tapón Aguanoso	10
50. <small>(*)</small>	Fruit: color of flesh	Fruit: couleur de la chair	Frucht: Farbe des Fleisches	Fruto: color de la pulpa		
PQ (d)	light green	vert clair	hellgrün	verde claro	Cristalina, Esmeralda, Reyna	1
	medium green	vert moyen	mittelgrün	verde medio	Burrona	2
	yellow	jaune	gelb	amarillo	Montesa	3
	orange	orange	orange	anaranjado	Pico Chulo	4
	pink	rose	rosa	rosa	Meloncillo Rosa, Memelo	5
	red	rouge	rot	rojo	Rojo Pelón, Rubí Reyna	6
	purple	pourpre	purpurn	púrpura	Liria, Morada Jalpa, Roja San Martín	7

	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplar	Note/ Nota
51.	Fruit: firmness of flesh	Fruit: fermeté de la chair	Frucht: Festigkeit des Fleisches	Fruto: firmeza de la pulpa		
QN (d)	soft	molle	weich	blanda	Memelo	3
	medium	moyenne	mittel	media	Cristalina	5
	firm	ferme	fest	firme	Fafayuca	7
52.	Fruit: juiciness of flesh	Fruit: jutosité de la chair	Frucht: Saftigkeit des Fleisches	Fruto: jugosidad de la pulpa		
QN (d)	low	faible	gering	baja	Amarilla Plátano, Memelo	3
	medium	moyenne	mittel	media	Reyna	5
	high	forte	hoch	alta	Burrona, Cristalina, Fafayuca	7
53. (*)	Fruit: number of fully developed seeds	Fruit: nombre de graines complètement développées	Frucht: Anzahl vollentwickelter Samen	Fruto: número de semillas completamente desarrolladas		
QN (d)	few	faible	gering	bajo	Roja Sanjuanera	3
	medium	moyen	mittel	medio	Fafayuca, Solferino	5
	many	élevé	groß	alto	Tapón de Mayo, Cristalina	7
54. (*)	Seed: size	Graine: taille	Samen: Größe	Semilla: tamaño		
QN (d)	small	petite	klein	pequeño	Cardón, Cascarona, Curesmeño	3
	medium	moyenne	mittel	medio	Pico Chulo, Reyna	5
	large	grande	groß	grande	Blanca San José, Burrona, Chapeada	7

	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejempl	Note/ Nota
55. (*) (+)	Fruit: presence of abortive seeds	Fruit: présence de graines abortées	Frucht: Vorhandensein verkümmter Samen	Fruto: presencia de semillas abortivas		
QN	(d) absent or very few	absentes ou très rares	fehlend oder sehr wenige	ausentes o muy pocas	Memelo , Solferino	1
	few	rares	wenige	pocas	Amarilla Plátano, Montesa	3
	medium	moyennes	mittel	media	Burrona, Chapeada, Cristalina	5
	many	nombreuses	viele	abundantes	Blanca Caldera	7
	very many	très nombreuses	sehr viele	muy abundantes	Blanca San José, Copena 2	9
56.	Fruit: total soluble solids	Fruit: teneur en matières solubles	Frucht: Gesamtgehalt an löslichen Feststoffen	Fruto: total de sólidos solubles		
QN	(d) low	faible	gering	bajo	Duraznillo	3
	(e) medium	moyenne	mittel	medio	Amarillo Plátano, Burrona	5
	high	forte	hoch	alto	Copena L-12, Fafayuca, Rojo Pelón	7
57.	Fruit: acidity	Fruit: acidité	Frucht. Säure	Fruto: acidez		
QN	(d) low	faible	gering	baja	Blanca Larga	3
	(e) medium	moyenne	mittel	media	Fafayuca	5
	high	élevée	hoch	alta	Blanca de Castilla	7

					Example Varieties	
	English	français	deutsch	español	Exemples	Note/ Nota
					Beispielssorten	
58. <small>(*)</small>	Time of beginning of flowering	Époque du début de la floraison	Zeitpunkt des Blühbeginns	Época de comienzo de la floración		
QN	early	précoce	früh	temprana	Sanjuanera, Tapón Aguanoso	3
	medium	moyenne	mittel	media	Pico Chulo, Reyna, Rojo Pelón	5
	late	tardive	spät	tardía	Burrona, Charola, Cristalina	7
59. <small>(*)</small>	Flowering habit	Floraison	Blühverhalten	Tipo de floración		
QL	once flowering	fleurit une fois	einmal blühend	una floración	Cristalina, Reyna, Rojo Pelón	1
	twice flowering	fleurit deux fois	zweimal blühend	dos floraciones	Cuaresmeño	2
60. <small>(*) (+)</small>	Time of harvest maturity	Époque de maturité de récolte	Zeitpunkt der Erntereife	Época de madurez para la cosecha		
QN	very early	très précoce	sehr früh	muy temprana	Tapón de Mayo	1
	early	précoce	früh	temprana	Tapón Aguanoso	3
	medium	moyenne	mittel	media	Montesa, Pico Chulo, Reyna	5
	late	tardive	spät	tardía	Burrona, Esmeralda, Fafayuca	7
	very late	très tardive	sehr spät	muy tardía	Charola, Chaveña	9
61.	Duration of harvesting period of fruit	Durée de la période de récolte du fruit	Dauer der Periode der Fruchternte	Duración del período de cosecha del fruto		
QN	short	courte	kurz	corta	Chapeada, Torreja	3
	medium	moyenne	mittel	media	Pico Chulo, Reyna	5
	long	longue	lang	larga	Burrona	7

8. Explanations on the Table of Characteristics

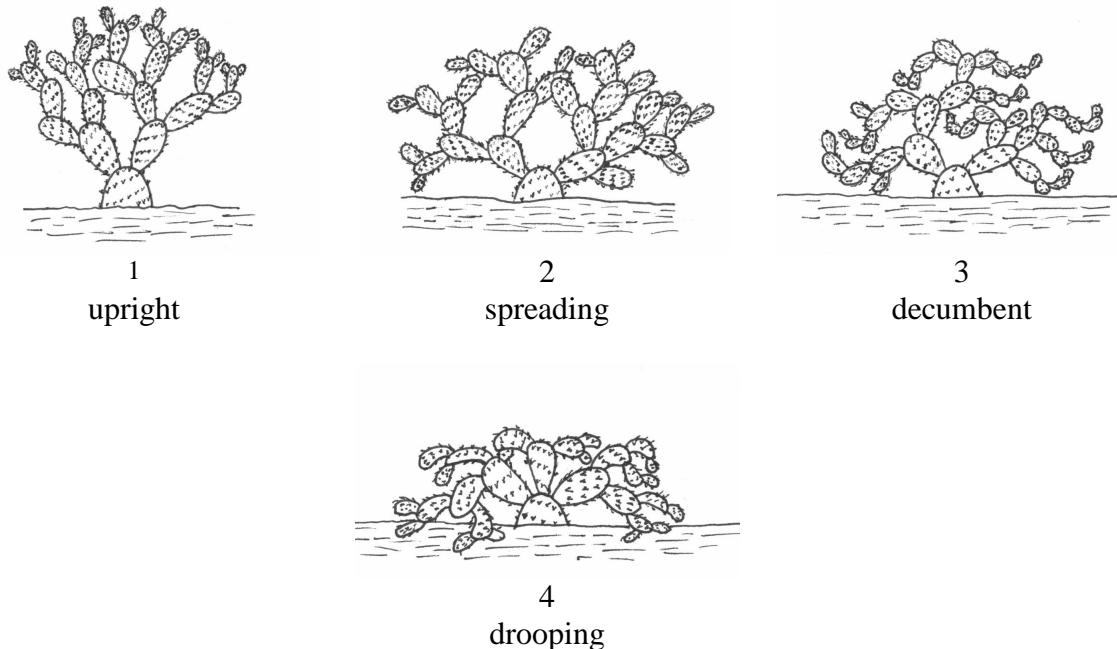
8.1 *Explanations covering several characteristics*

Characteristics containing the following keys in the second column of the Table of Characteristics should be examined as indicated below:

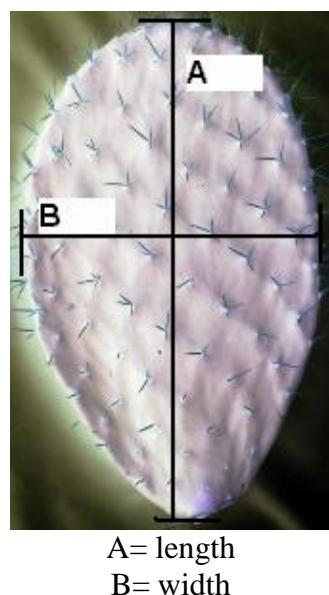
- (a) Cladodes: Unless otherwise stated all observations on the cladode should be made on mature cladodes, one to two years old.
- (b) Areoles, spines and glochides: Unless otherwise stated, all observations on the areole, spine and glochide should be made on intact cladodes or intact fruits as appropriate.
- (c) Flower: Unless otherwise stated all observations on the flower should be made at the peak of flowering time. All observations on flower should be made at the first day of opening.
- (d) Fruit: All observations on the fruit should be made on 20 intact fruits which are fully mature for consumption.
- (e) Fruit diameter/thickness of peel/acidity/total soluble solids: The observations of fruit diameter, thickness of peel, acidity and total soluble solids should be made in the middle part of the fruit. For total soluble solids the middle part of the fruit must be used with the help of a refractometer.

8.2 Explanations for individual characteristics

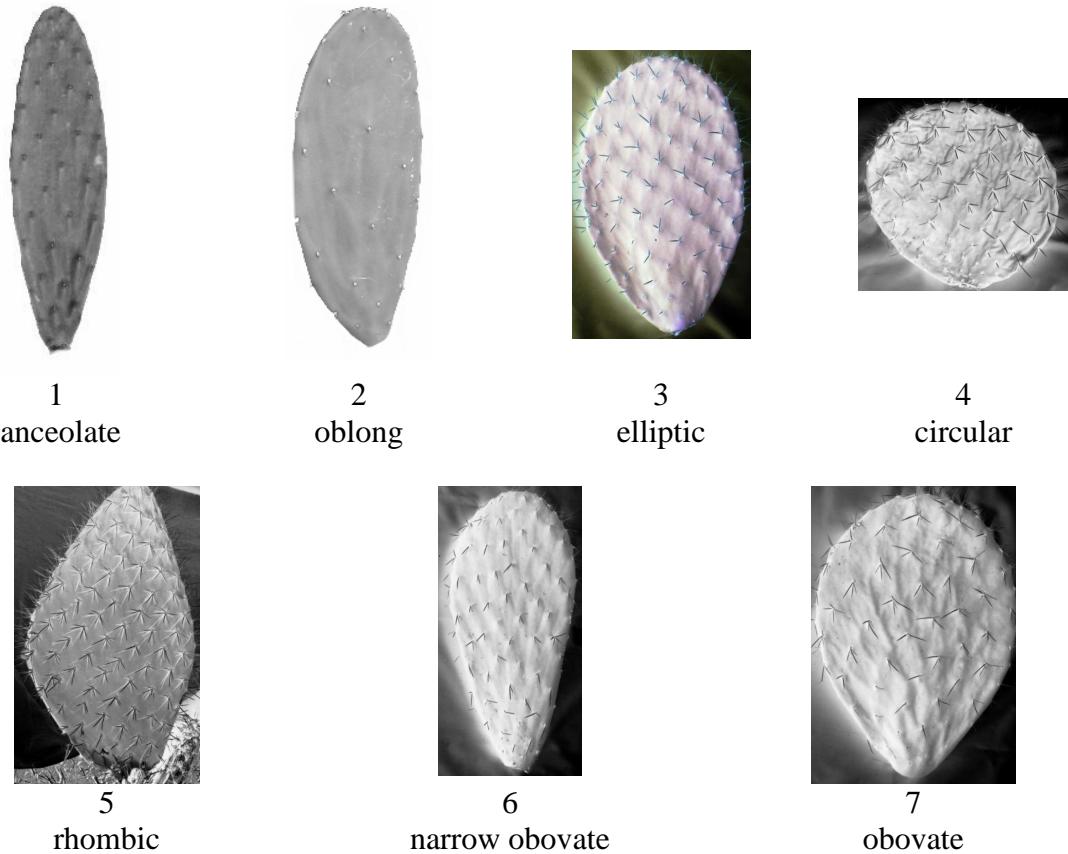
Ad. 1: Plant: growth habit



Ad. 4: Cladode: length
Ad. 5: Cladode: width



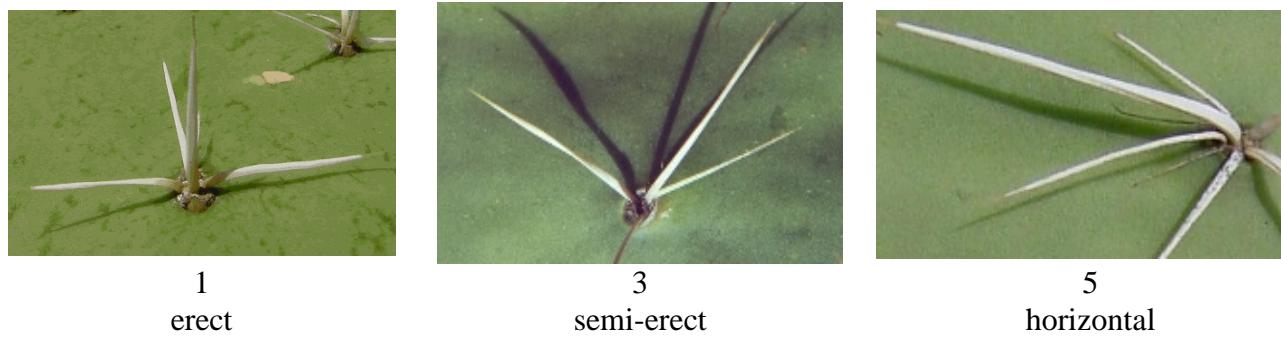
Ad. 7: Cladode: shape



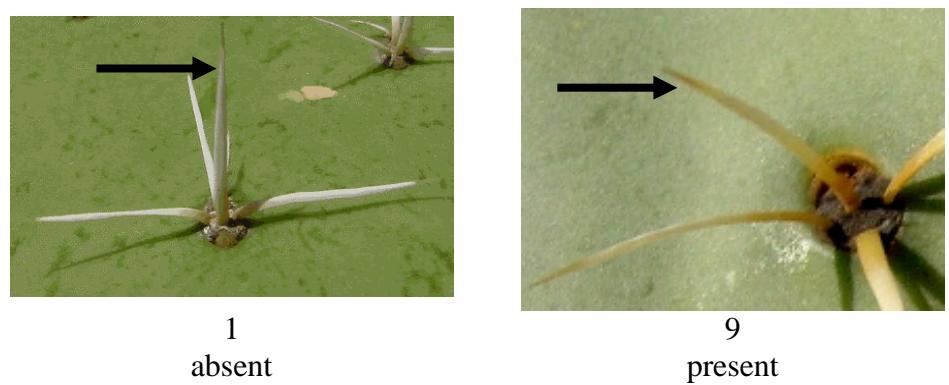
Ad. 19: Spine: surface



Ad. 20: Central spine: attitude



Ad. 22: Central spine: curvature (excluding base)



Ad. 23: Central spine: twisting

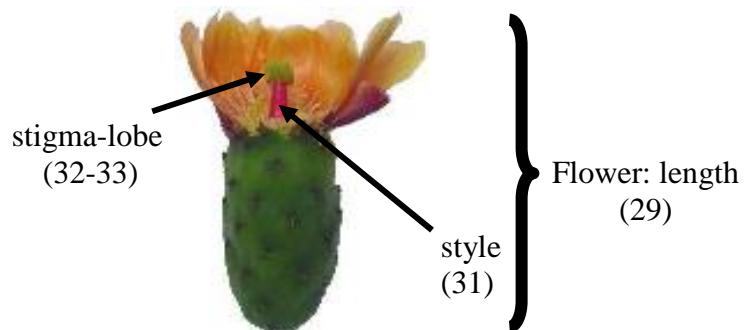


Ad. 29: Flower: length

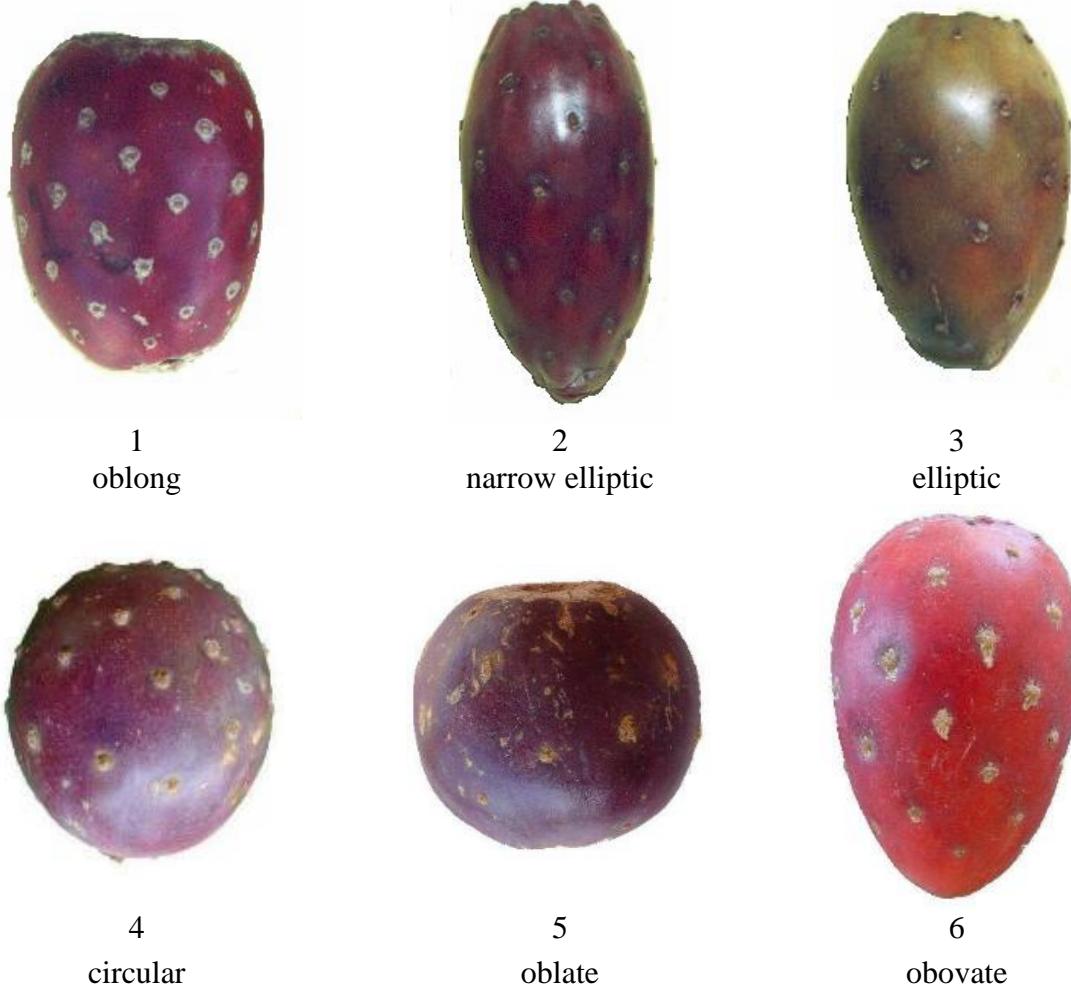
Ad. 31: Flower: color of style

Ad. 32: Flower: number of stigma lobes

Ad. 33: Flower: color of stigma lobe



Ad. 37: Fruit: shape



Ad. 41: Fruit: length of stalk



3
short



5
medium

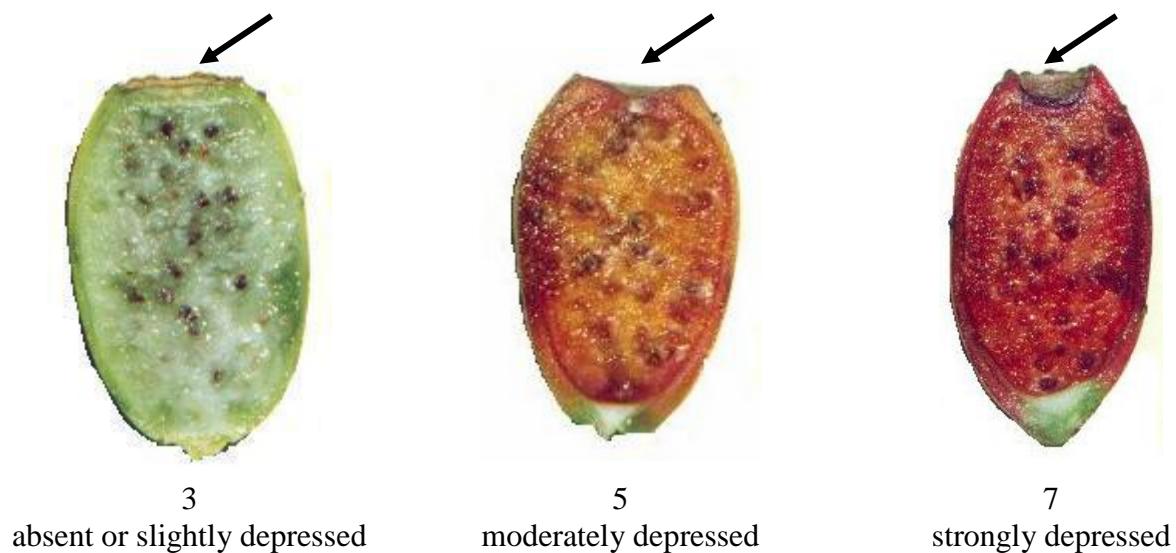


7
long

}

}

Ad. 42: Fruit: depression of receptacle scar



Ad. 55: Fruit: presence of abortive seeds

Absolute number to be observed, rather than the proportion in relation to the number of fully developed seeds.

Ad. 60: Time of harvest maturity

The time of harvest should be considered to be when the fruit flesh has reached a stable total soluble solids content, measured with a refractometer.

9. Literature

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10. Technical Questionnaire

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:
		Application date: (not to be filled in by the applicant)
<p style="text-align: center;">TECHNICAL QUESTIONNAIRE to be completed in connection with an application for plant breeders' rights</p>		
1. Subject of the Technical Questionnaire		
1.1 <i>Latin Name</i>	OPUNTIA , Group 1 Please state species if known:	[]
Common Name	CACTUS PEAR	
1.2 <i>Latin Name</i>	OPUNTIA , Group 2 Please state species if known:	[]
Common Name	XOCONOSTLES	
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 []
(please state where, when and how developed)

4.1.4 Other []
(please provide details)

4.2 Method of Propagating the Variety

4.2.1 Vegetative propagation

- (a) cuttings []
- (b) other (state method) []

4.2.2 Other (please provide details) []

TECHNICAL QUESTIONNAIRE		Page {x} of {y}	Reference Number:
5. Characteristics of the variety to be indicated (the number in brackets refers to the corresponding characteristic in Test Guidelines; please mark the note which best corresponds).			
	Characteristics	Example Varieties	Note
5.1 (14)	Cladode: color of areoles		
	grey	Milpa Alta, Reyna	1[]
	yellow brown	Burrona	2[]
	brown	Chaveña	3[]
	black	Cardona	4[]
5.2 (44)	Fruit: thickness of peel		
	thin	Amarilla San José, Montesa, Reyna	3[]
	medium	Rojo Lirio, Rojo Pelón, Tapón de Mayo	5[]
	thick	Caidilla Legítima	7[]
5.3 (54)	Seed: size		
	small	Cardón, Cascarona, Curesmeño	3[]
	medium	Pico Chulo, Reyna	5[]
	large	Blanca San José, Burrona, Chapeada	7[]
5.4 (59)	Flowering habit		
	once flowering	Cristalina, Reyna, Rojo Pelón	1[]
	twice flowering	Cuaresmeño	2[]
5.5 (60)	Time of harvest maturity		
	very early	Tapón de Mayo	1[]
	early	Tapón Aguanoso	3[]
	medium	Montesa, Pico Chulo, Reyna	5[]
	late	Burrona, Esmeralda, Fafayuca	7[]
	very late	Charola, Chaveña	9[]

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:	
6. Similar varieties and differences from these varieties			
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
<i>Example</i>	<i>Fruit: length</i>	<i>short</i>	<i>medium</i>
Comments:			
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 Special conditions for the examination of the variety			
7.2.1 Are there any special conditions for growing the variety or conducting the examination?			
Yes []		No []	
7.2.2 If yes, please give details:			
7.3 Other information			

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.

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 or pesticide) | Yes [] | No [] |
| (c) Tissue culture | Yes [] | No [] |
| (d) Other factors | Yes [] | No [] |

Please provide details of 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