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UPOV

INTERNATIONAL UNION FOR THE PROTECTION OF NEW VARIETIES OF PLANTS

GENEVA

DRAFT

HAWTHORN *

UPOV Code: CRATA

(*Crataegus* L.)

GUIDELINES

FOR THE CONDUCT OF TESTS

FOR DISTINCTNESS, UNIFORMITY AND STABILITY

prepared by an expert from Mexico
to be considered by the

Technical Working Party for Fruit Crops at its thirty-seventh session,
to be held in Salvador, Bahia State, Brazil, from August 21 to 25, 2006

Technical Working Party for Ornamental Plants and Forest Trees (TWO),
at its thirty-ninth session, to be held in Fortaleza, Ceará State, Brazil,
from August 28 to September 1, 2006

Alternative Names:*

Botanical name	*English*	*French*	*German*	*Spanish*
Crataegus L.	Hawthorn	Aubépine	Weißdorn	Espino, Espinero, Manzanilla, Marjoleto, Marzoleto, Tejocote

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

ASSOCIATED DOCUMENTS

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

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

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1. Subject of these Test Guidelines

These Test Guidelines apply to all varieties of *Crataegus* 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 graft sticks, grafted plants or plants on their own roots.

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

8 graft sticks or 5 plants.

In the case of grafted plants, the rootstock to be used is 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

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

The growing cycle is considered to be the duration of a single growing season, beginning with bud burst (flowering and vegetative), growth and fruit harvest and concluding when the following dormant period ends with the swelling of new season buds.

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. 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 five 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 should be made on 5 plants or parts taken from each of 5 plants. In the case of parts of plants, the number to be taken from each of the plants should be 2.

3.6 Additional Tests

Additional tests, for examining relevant characteristics, may be established.

4. Assessment of Distinctness, Uniformity and Stability

4.1 Distinctness

4.1.1 General Recommendations

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

4.1.2 Consistent Differences

The differences observed between varieties may be so clear that more than one growing cycle is not necessary. In addition, in some circumstances, the influence of the environment is not such that more than a single growing cycle is required to provide assurance that the differences observed between varieties are sufficiently consistent. One means of ensuring that a difference in a characteristic, observed in a growing trial, is sufficiently consistent is to examine the characteristic in at least two independent growing cycles.

4.1.3 Clear Differences

Determining whether a difference between two varieties is clear depends on many factors, and should consider, in particular, the type of expression of the characteristic being examined, i.e. whether it is expressed in a qualitative, quantitative, or pseudo-qualitative manner. Therefore, it is important that users of these Test Guidelines are familiar with the recommendations contained in the General Introduction prior to making decisions regarding distinctness.

4.2 Uniformity

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

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

4.3 Stability

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

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

5. Grouping of Varieties and Organization of the Growing Trial

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

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

5.3 The following have been agreed as useful grouping characteristics:

(a) Shoot: presence of thorns (characteristic 8);

(b) Leaf blade: lobes (characteristic 18);

(c) Petiole: length of petiole (characteristic 23).

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

6. Introduction to the Table of Characteristics

6.1 Categories of Characteristics

6.1.1 Standard Test Guidelines Characteristics

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

6.1.2 Asterisked Characteristics

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

6.2 States of Expression and Corresponding Notes

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

6.3 Types of Expression

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

6.4 Example Varieties

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

6.5 Legend

(*) Asterisked characteristic – see 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) – (g) See Explanations on the Table of Characteristics in Chapter 8, Section 8.1.

(+) See Explanations on the Table of Characteristics in Chapter 8, 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. **(*)** **(+)**		**Tree: habit**					
PQ	**(a)**	fastigate				Ergo, Gaca, Pingo	1
		upright				Azucena, Calpar, Tequex,	2
		spreading				Atexcac	3
		semi drooping				Candelaria, Chico,	4
		drooping					5
2. **(+)**		**Tree: shape**					
PQ	**(b)**						
		semi globose				Ara	1
		ovoid				Edgar, Epi. Pingo	2
		oblong				Gloria	3
		globose				Erick	4
		transverse ellipsoid				Chela, Poblano	5
		obovoid				Ade	6
3.		**Tree: height**					
QN	**(a)**	short				Belén, Gloria	3
		medium				Epi, Robelo	5
		tall				Tequex	7
4. **(+)**		**Tree: growth type**					
PQ	**(a)**	bush				Calpantino, Candelaria, Mitzi	1
		intermediate				Azucena	2
		tree				Calpan Gold	3

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
5. **(+)**		**Tree: branching**					
QL	**(a)**	candelabrous				Gaca	1
		normal				Calpan Gold	2
6.		**Tree: density of foliage**					
QN	**(b)**	sparse				Superior	3
		medium				Epi	5
		dense					7
7.		**Trunk: diameter**					
QN		small				Chapinguero	3
		medium				Erick	5
		large					7
8. **(*)**		**Shoot: presence of thorns**					
QL	**(a)**	absent				Edgar, Epi	1
		present				Chela, Superior, Pingo	9
9.		**Shoot: number of thorns**					
QN	**(c)**	few				Tequex	1
		intermediate				Chela, Superior. Pingo	2
		many				Tempranero	3
10.		**Shoot: length of thorns**					
QN	**(c)**	short				Xami	3
		medium				Chapinguero, Mutabilis, Splendens,	5
		long				Belén	7

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
11.		**Shoot: length**					
QN	**(c)**	short				Karen	3
		medium				Tempranero	5
		long				Elena	7
12.		**Shoot: growth type** **NL: NEW**					
QL	**(c)**	straight				Ara, Elena, Karen	1
		zig zag				Carrierei, Flexuosa	2
13.		**Leaf blade: lobes**					
QL	**(d)**	absent				Ade, Mago	1
		present				Compacta, Flexuosa, Stricta,	9
14. **(*)**		**Leaf blade: length**					
QN	**(c)**	short				Belén, Mutabilis	3
		medium				Epi	5
		long				Carrierei, Edgar	7
15.		**Leaf blade: width**					
QN	**(d)**	narrow				Flexuosa, Epi	3
		medium				Aurora, Edgar	5
		broad				Wattiana	7
16. **(*)**		**Leaf blade:** **width/length ratio**					
QN	**(d)**	small				Nati	3
		medium				Karen, Carla	5
		large				Félix	7

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
17.		**Leaf blade: margin**					
(+)							
PQ	**(d)**	entire					1
		crenate				Karen	2
		bicrenate				Tempranero	3
		serrate				Tzapingo	4
		biserrate				Ade, Pingo	5
18.		**Leaf blade: lobes**					
(*)							
(+)							
QL	**(d)**	absent				Ade, Mago	1
		present				Compacta, Flexuosa, Stricta,	9
19.		**Leaf blade: depth of lobes**					
(+)							
QN		shallow				Stipulacea	3
		medium				Punicea	5
		deep				Major	7
20.		**Leaf: color**	**(MX: to consider to delete, much affected by environment)**				
PQ	**(d)**	light green					1
		medium green					2
		dark green					3
		reddish green					4
20a.		**Leaf: color**	**(NL: NEW)**				
QL	**(d)**	green				Alex, Calpan Gold, Splendens,	1
		green and cream				Gireoudii	2
		reddish green					3

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
21.		**Leaf: pubescence (MX to add: on upper surface)**	**(MX: in our collection we don't find a intermediate state)**	**(DE: we don't find and intermediate state either)**			
QL	**(d) (e)**	absent				Calpantino	1
		present				Calpan Gold, Erick, Chapeado	9
22.		**Leaf: surface**					
QL	**(d)**	smooth				Aby	1
		wrinkled				Chela, Flexulosa	2
23. (*)		**Petiole: length**					
QN	**(d)**	short				Tzapingo	3
		medium				Paul's Scarlet, Plena	5
		long				Toba, Wattiana	7
24.		**Flower: length**					
(+)							
QN	**(f)**	short				Alex	3
		medium				San Cristóbal	5
		tall				Poblano	7
25.		**Flower: diameter**					
(+)							
QN	**(f)**	small				Aby, Poblano	3
		medium				Chela, Pingo	5
		large				Superior, Tequex	7

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
26.		**Flower: color of petals**					
PQ	**(f)**	white				Chapeada, Chela	1
		light pink					2
		medium pink					3
		dark pink					4
		red					5
27.		**Flower: color of center**	**NEW: MX**				
PQ	**(f)**	yellow				Edgar, Gloria	1
		green				Poblano, Superior	2
		brown				Tequex, Tempranero	3
		pink				Centenario	4
		red pink				San José	5
		purple				Chela	6
		dark purple				San Cristóbal	7
28. **(+)**		**Flower: attitude of petals**					
PQ	**(f)**	erect				Poblano, Tempranero	1
		semi erect				Chela	2
		horizontal				Edgar, Pingo, Superior	3
29.		**Flower: arrangement of petals**					
PQ	**(f)**	free				Edgar, Superior	1
		intermediate				Natzi	2
		overlapping				San Cristóbal	3

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
30a.		**Flower: incisions in sepals**	**(MX: to consider to delete)**	**(DE: to have an explanation or figure)**			
QL	**(f)**	absent					1
		present					9
30b.		**Flower: number of stamens**					
QN	**(f)**	4	MX : to consider change from 1-9 for 1 to 7.			Yash	1
		8				Centenario	2
		10				San Cristóbal, San José	3
		16				Superior	4
		18				Edgar	5
		20				Chela, Pingo	6
		24				Lila	7
31. **(+)**		**Flower: position of stigmas relative to anthers**	**(MX: to consider to delete)**				
QN	**(f)**	below					1
		same level					2
		above					3

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
32.		**Flower: color of anthers**					
PQ	**(f)**	white					1
		cream	MX: New			Superior	2
		yellow	MX: New			San José	3
		light brown				San Cristóbal	4
		medium brown				Chela, Poblana	5
		dark brown				Pingo	6
		orange				Elvia	7
		pink	MX: New			Robelo	
		reddish					8
		purple					9
		grey					10
		grey black					11
33. **(+)**		**Flower: shape of anther**					
PQ	**(f)**	circular				Betty	1
		elliptic				Aby, San José	2
		cordate				Carla	3
34. **(+)**		**Flower: length of calyx**					
QN	**(f)**	short				Alex	3
		medium				San José	5
		long				Lupita	7

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
35. (*) (+)		**Flower: diameter of calyx at broadest part**				**MX: example varieties to be provided by México during TWF**	
QN	**(f)**	small					3
		medium					5
		large					7
36. (*)		**Flower: length of pedicel**					
QN	**(f)**	short				Alex	3
		medium				Cris	5
		long				San José	7
37.		**Flower: number of styles**					
QN	**(f)**	one	MX: To change	one or less than two		Elvia	1
		two or three		two or less than four		Edgar	2
		more than three		four or more than six		Natzi	3

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
38. **(*)**		**Fruit: color**					
PQ	**(g)**	yellow				Tzapingo	1
		yellow and orange				Alex, Chapeado	2
		yellow and red				Elena	3
		orange				Ade, Huejo	4
		orange and red				Poblano	5
		medium red				Ara	6
		dark red				Eli	7
		purple					8
		light green				Epi, San Nicolás	9
		medium green					10
		brown	MX: to consider to delete, the literature mentions that is for other genera and not for *Crataegus*				11
		black					12
39. **(+)**		**Fruit: general shape**					
PQ	**(g)**	globose conical					1
		ellipsoid				Santa Cata	2
		globose				Pingo	3
		obloid				Dany	4
		obovoid				Erick	5
40. **(+)**		**Fruit: presence of neck**					
QL	**(g)**	absent				Carla	1
		present				Lupita	9

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
41.		**Fruit: length**					
QN	**(g)**	short				Dany, Tzapingo	3
		medium				Epi	5
		long				Calpan Gold	7
42.		**Fruit: width**					
QN	**(g)**	narrow				Yesenia	3
		medium				Tequex	5
		broad				Carla	7
43. **(*)**		**Fruit: width/length ratio**					
QN	**(g)**	small				Ela, Epi, Superior	3
		medium				Calpar, Lila, San Nicolás	5
		large				Félix, San José	7
44. **(+)**		**Fruit: asymmetry in transverse section**					
QN	**(g)**	symmetric to slightly asymmetric				Natzi	1
		moderately asymmetric				Chapinguero, Chela	2
		strongly asymmetric				Cris	3
45. **(+)**		**Fruit: calyx end cavity**					
QL	**(g)**	closed				Dany, Robelo	1
		open				Karen	2

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
46. **(+)**		**Fruit: depth of calyx end cavity**					
QN	**(g)**	very shallow				Candelaria, Mago	1
		shallow				Rob	3
		medium				Gloria	5
		deep				Chapeado	7
		very deep				Elvia	9
47.		**Fruit: color of flesh**	**To read: main color of the flesh (MX)**				
PQ	**(g)**	green				San Nicolás	1
		white				Epi	2
		light yellow	MX: New			Superior	3
		medium yellow				Belén	4
		dark yellow	MX: New			Azucena	5
		orange				Chela, Cris, Poblano	6
		red				Dany	7
48. **(*)**		**Fruit: brightness**					
QL	**(g)**	absent				Cas, Eli	1
		present				Ara	9
49.		**Fruit: density of lenticels**					
QN	**(g)**	very scarce				Robelo	1
		scarce				Mago	3
		medium					5
		abundant				Iracema	7
		very abundant				Paola	9

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
50.		**Fruit: texture of surface**					
QL	**(g)**	smooth	MX: To change scale from 1-9 to 1-3			Dany	1
		medium				San Nicolás	2
		rough				Tzingo	3
51.		**Fruit: aroma**					
QL	**(g)**	low				Chela	1
		medium				Elvia	2
		strong				Orem	3
52.		**Endocarp: number**					
QN	**(g)**	few				Natzi, Santa Cata	1
		medium				Edgar	2
		many				Centenario	3
53.		**Endocarp: number of lobes**	**(DE: to include explanation)**			**MX: example varieties to be provided by México during TWF**	
QN	**(g)**	few					1
		medium					2
		many					3
54.		**Endocarp: length**					
(+)							
QN	**(g)**	short				Pingo	3
		medium				Natzi	5
		large				Chela	7

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
55. **(+)**		**Endocarp: width at broadest part**					
QL	**(g)**	narrow				Ade	3
		medium				San Cristóbal	5
		broad				Carla	7
56. **(*)**		**Endocarp: width/length ratio**					
QL	**(g)**	small				Belén, Lila, Yesenia	3
		medium				Calpar, Candelaria, Yash	5
		large				Ixayoc	7
57.		**Time of flowering**				**MX: example varieties to be provided by México during TWF**	
QN		early					3
		medium					5
		late					7
58.		**Duration of flowering**	**(MX: to consider to delete, is to short for our conditions in all varieties)**				
QN		short					3
		medium					5
		long					7
59.		**Time of harvest**					
QN		very early				Tempranero	1
		early				Adela	3
		medium				Ara, Mago	5
		late				Nati	7
		very late				Mitzi	9

8. Explanations on the Table of Characteristics

8.1 Explanations covering several characteristics

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

(a) Tree: All observations should be made on foliated tress in spring.

(b) Tree, stem and branch: All observations should be made on bare trees in winter.

(c) Shoot and internodes: All observations on vegetative shoot should be made on the current season's shoot after growth. For the case of length of internodes it should be made in the middle part of the shoot.

(d) Leaf: All observations on the leaf should be made on mature leaves from branches on the outside of the tree which are neither bearing fruit nor showing signs of new flush. Leaves should be taken from the middle third of the current season's growth.

(e) Pubescence: All observations on pubescence should be made with the aid of a magnifying glass.

(f) Flower: All observations on the flower should be made during the first flower opening, at the start of anther dehiscence.

(g) Fruit and endocarp: All observations on the fruit and endocarp should be made on 10 typical fruits taken from a minimum sample of 20 fruits, at the time of maturity for harvest.

8.2 Explanations for individual characteristics

Ad. 1: Tree: habit

1
fastigate

2
upright

3
spreading

4
semi drooping

5
drooping

Ad. 2: Plant: shape

1
semi globose

2
ovoid

3
oblong

4
globose

5
transverse ellipsoid

6
obovoid

Ad. 4: Tree: growth type

1
bush

2
intermediate

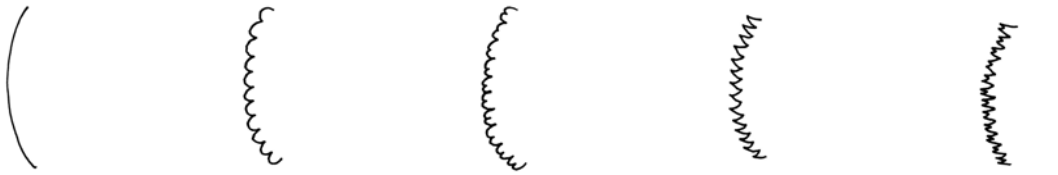
3
tree

Ad. 5: Tree: branching

1
candelabrous

2
normal

Ad. 17. Leaf blade: margin



1
absent

2
crenate

3
bicrenate

4
serrate

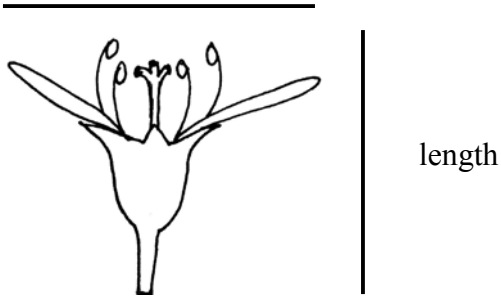
5
biserrate

Ad. 19: Leaf blade: presence of lobes

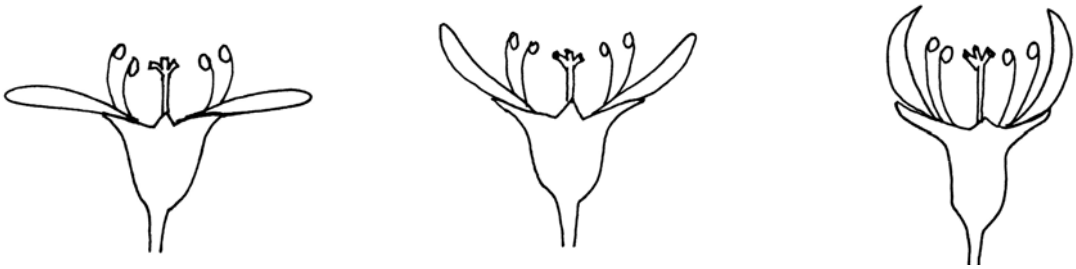
1
absent

2
present

Ad. 24: Flower: length
Ad. 25: Flower: diameter



Ad. 28: Flower: attitude of petals

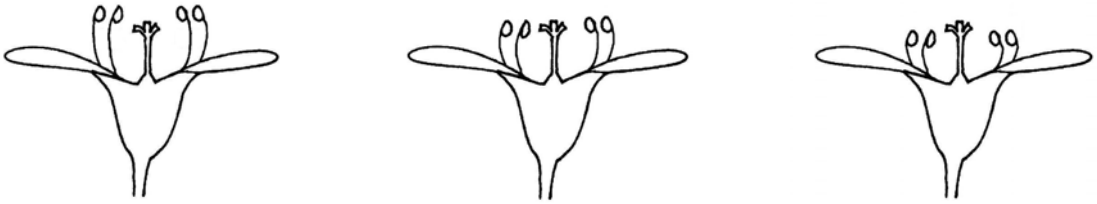


1
horizontal

2
semi erect

3
erect

Ad. 31: Flower: position of stigmas relative to anthers (MX: to delete)



1
below

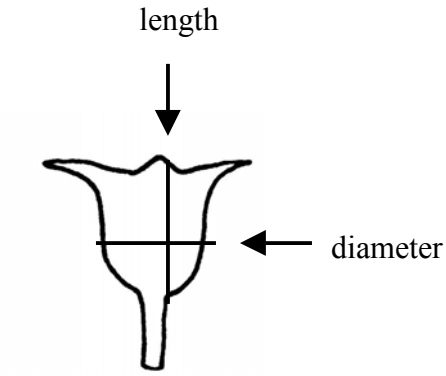
2
same level

3
above

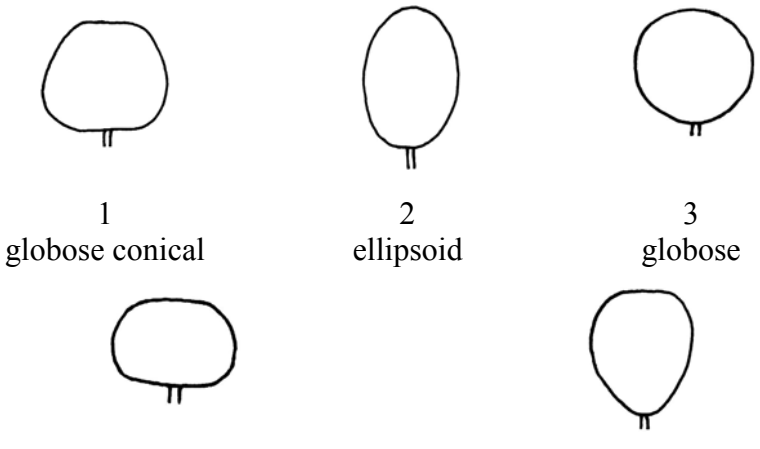
Ad. 33: Flower: shape of anther

1 circular | 2 elliptic | 3 cordate

Ad. 34: Flower: length of flower calyx
Ad. 35: Flower: diameter of calyx in broadest part



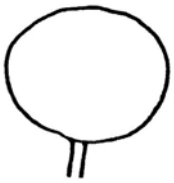
Ad. 39: Fruit: general shape



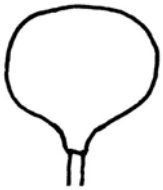
1 globose conical | 2 ellipsoid | 3 globose

4 obloid | 5 obovoid

Ad. 40: Fruit: presence of neck

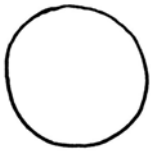


1
absent



9
present

Ad. 44: Fruit: asymmetry in transverse section

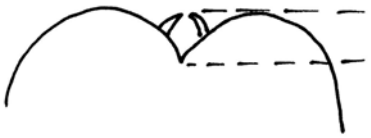


1
symmetric to slightly asymmetric

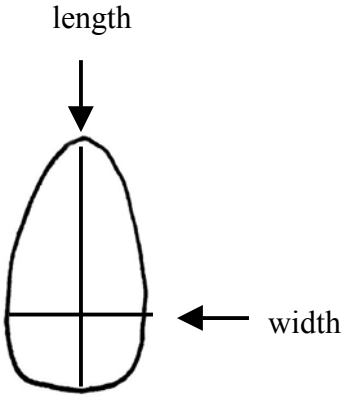
2
moderately asymmetric

3
strongly asymmetric

Ad. 46: Fruit: depth of apex cavity



Ad. 54: Endocarp: length
Ad. 55: Endocarp: width at broadest part



9. Literature

Borys, M. W., H. Leszczyñska-Borys. 1994. "Tejocote (*Crataegus* spp.) – planta para solares, macetas e interiores". Revista Chapingo Serie Horticultura 1(2): 95-107.

Phipps, J. B. 1997. "Monography of Northern Mexican *Crataegus* (Rosaseae, subfam. Maloideae)". The University of Western Ontario. Departament of Plant Science. London, Ontario, Canada. 93 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 *Latin Name*	*Crataegus* L.
1.2 Common Name	Hawthorn

2. Applicant

Name	
Address	
Telephone No.	
Fax No.	
E-mail address	
Breeder (if different from applicant)	

3. Proposed denomination and breeder's reference

Proposed denomination (if available)	
Breeder's reference	

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

[#]4. Information on the breeding scheme and propagation of the variety

4.1 Breeding Scheme

Variety resulting from:

4.1.1 Crossing

(a) controlled cross [ ]
(please state parent varieties)
(b) partially known cross [ ]
(please state known parent variety(ies))
(c) unknown cross [ ]

4.1.2 Mutation [ ]
(please state parent variety)

4.1.3 Discovery and development [ ]
(please state where and when discovered and how developed)

4.1.4 Other [ ]
(please provide details)

4.2 Method of propagating the variety

4.2.1 Vegetative

(a) grafted [ ]

(b) shoot cuttings [ ]

(c) root cuttings [ ]

[#] 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:

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 (1)	**Tree: habit**		
	fastigate	Ergo, Gaca, Pingo	1[ ]
	upright	Azucena, Calpar, Tequex,	2[ ]
	spreading	Atexcac	3[ ]
	semi drooping	Candelaria, Chico,	4[ ]
	drooping		5[ ]
5.2 (8)	**Shoot: presence of thorns**		
	absent	Edgar, Epi	1[ ]
	present	Chela, Superior, Pingo	9[ ]
5.3 (14)	**Leaf blade: length**		
	short	Belén, Mutabilis	3[ ]
	medium	Epi	5[ ]
	long	Carrierei, Edgar	9[ ]
5.4 (35)	**Flower: diameter of calyx**		
	narrow		3[ ]
	medium		5[ ]
	broad		7[ ]

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

	Characteristics	Example Varieties	Note
5.5 (38)	**Fruit: color**		
	yellow	Tzapingo	1[ ]
	yellow and orange	Alex, Chapeado	2[ ]
	yellow and red	Elena	3[ ]
	orange	Ade, Huejo	4[ ]
	orange and red	Poblano	5[ ]
	medium red	Ara	6[ ]
	dark red	Eli	7[ ]
	purple		8[ ]
	light green	Epi, San Nicolás	9[ ]
	medium green		10[ ]
	brown		12[ ]
	black		11[ ]
5.6 (43)	**Fruit: width/length ratio**		
	small	Ela, Epi, Superior	3[ ]
	medium	Calpar, Lila, San Nicolás	5[ ]
	large	Félix, San José	7[ ]

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	*Leaf blade: lobes*	*e.g. note 1*	*note 9*
		e.g. absent	*present*

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 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

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

8. Authorization for release

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

Yes [ ] No [ ]

(b) Has such authorization been obtained?

Yes [ ] No [ ]

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

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

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

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

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

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

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

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

(c) Tissue culture Yes [ ] No [ ]

(d) Other factors Yes [ ] No [ ]

Please provide details for where you have indicated "yes".

……

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

Applicant's name

Signature Date

[End of document]