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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 Ornamental Plants and Forest Trees
at its fortieth session, to be held in Kunming, China, from July 2 to 6, 2007

Technical Working Party for Fruit Crops
at its thirty-seventh session, to be held in Jeju, Korea, from July 9 to 13, 2007

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.]

TABLE OF CONTENTS PAGE

1. SUBJECT OF THESE TEST GUIDELINES 3
2. MATERIAL REQUIRED 3
3. METHOD OF EXAMINATION 3
3.1 Number of Growing Cycles 3
3.2 Testing Place 3
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
4.2 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
6.2 States of Expression and Corresponding Notes 6
6.3 Types of Expression 6
6.4 Example Varieties 6
6.5 Legend 7
7. TABLE OF CHARACTERISTICS/TABLEAU DES CARACTÈRES/MERKMALSTABELLE/TABLA DE CARACTERES 8
8. EXPLANATIONS ON THE TABLE OF CHARACTERISTICS 21
8.1 Explanations covering several characteristics 21
8.2 Explanations for individual characteristics 22
9. LITERATURE 28
10. TECHNICAL QUESTIONNAIRE 29

1. Subject of these Test Guidelines

These Test Guidelines apply to all varieties of *Crataegus* L., of the family Rosaceae.

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 7);
(b) Leaf blade: lobes (characteristic 16);
(c) Petiole: length (characteristic 23).

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

6. Introduction to the Table of Characteristics

6.1 Categories of Characteristics

6.1.1 Standard Test Guidelines Characteristics

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

6.1.2 Asterisked Characteristics

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

6.2 States of Expression and Corresponding Notes

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

6.3 Types of Expression

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

6.4 Example Varieties

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

6.5 Legend

(*) Asterisked characteristic – see Chapter 6.1.2

(QL) Qualitative characteristic – see Chapter 6.3
(QN) Quantitative characteristic – see Chapter 6.3
(PQ) Pseudo-qualitative characteristic – see Chapter 6.3

(a) – (g) See Explanations on the Table of Characteristics in Chapter 8.1.
(+) See Explanations on the Table of Characteristics in Chapter 8.2

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

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
1. **(*)** **(+)**		**Plant: habit**					
PQ	**(a)**	fastigate				Ergo, Gaca, Pingo, (Chlorosarca)	1
		upright				Azucena, Calpar, Stricta	2
		spreading				Atexcac, (Grignonensis)	3
		semi drooping				Candelaria, Chico	4
		drooping				**(Laciniata)**	5
		weeping				Pendula	6
2. **(+)**		**Plant: shape of canopy**					
PQ	(b)	semi globose				Ara, (Persimilis)	1
		ovoid				Edgar, Epi, Pingo, (Lavalleei)	2
		oblong				**Gloria, (Chlorosarca)**	3
		globose				Erick, (Pheanopyrum)	4
		transverse ellipsoid				Chela, Poblano, (Prunifolia)	5
		obovoid				Ade	6
3.		**Plant: height**					
QN	**(a)**	short				Belén, Gloria	3
		medium				Epi, Robelo, Mutabilis	5
		tall				Tequex, Compacta	7

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
4. **(+)**		**Plant: growth type**					
PQ	**(a)**	shrub				Calpantino, Candelaria, Mitzi, Compacta	1
		intermediate				Azucena, Paul's Scarlet	2
		tree				Calpan Gold, Plena	3
5. **(+)**		**Plant: candelabrous branching**	**MX: To consider to delete since is included in Char. 1**				
QL	**(a)**	absent				Calpan Gold	1
		present				Gaca	9
6.		**Plant: density of foliage**					
QN	**(b)**	sparse				Superior	3
		medium				Epi, Paul's Scarlet	5
		dense				Carrieri	7
7. **(*)**		**Shoot: presence of thorns**					
QL	**(a)**	absent				Edgar, Epi, Compacta	1
		present				Chela, Pingo, Mutabilis	9
8.		**Shoot: number of thorns**					
QN	**(c)**	few				Tequex, Salicifolia	1
		intermediate				Chela, Pingo, Mutabilis	2
		many				Tempranero, Carrieri	3

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
9.		**Shoot: length of thorns**					
QN	**(c)**	short				Gloria, Chapinguero, (Lavaleei)	3
		medium				Ara, (Prunifolia)	5
		long				(Chrysocarpa)	7
10.		**Shoot: length**					
QN	**(c)**	short				Karen	3
		medium				Tempranero	5
		long				Elena	7
11.		**Shoot: growth type**					
QL	**(c)**	straight				Ara, Elena, Stricta	1
		zig zag				Carrierei, Flexuosa	2
12. **(*)**		**Leaf blade: length**					
QN	**(c)**	short				Belén, Mutabilis	3
		medium				Epi	5
		long				Carrierei, Edgar	7
13.		**Leaf blade: width**					
QN	**(d)**	narrow				Epi, Flexuosa, Mutabilis	3
		medium				Aurora, Edgar, Paul's Scarlet	5
		broad				Wattiana, (Pedicellata)	7
14. **(*)**		**Leaf blade: length/width ratio**					
QN	**(d)**	small				Flexuosa, Toba, Wattiana	3
		medium				Azucena, Carrierei	5

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
		large				Poblano, Stipulacea	7
15. **(+)**		**Leaf blade: margin**					
PQ	**(d)**	entire				Flexuosa	1
		crenate				Karen	2
		bicrenate				Tempranero	3
		serrate				Tzapingo, Compacta	4
		biserrate				Ade, Pingo, Toba	5
16. **(*)** **(+)**		**Leaf blade: lobes**					
QL	**(d)**	absent				Ade, Mago	1
		present				Compacta, Flexuosa, Stricta	9
17. **(+)**		**Leaf blade: depth of lobes**					
QN		shallow				Stipulacea	3
		medium				Punicea	5
		deep				Major, Toba	7
18.		**Leaf: color**					
QL	**(d)**	green				Alex, Calpan Gold, Splendens, Carrieri	1
		green and cream				Gireoudii	2
		reddish green					3
19.		**Leaf blade: glossiness**					
QN	**(d)**	absent or very weak				Tzapingo	1
		medium				Mago, Nitida	2
		strong				Carrierei	3

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
20.[a]		**Leaf: variegation**	**MX: this char. Was deleted before and included in 20 Leaf blade: color, in the state green and cream**	**DE: If char. 20 should be maintained, it could be moved before char. 18, and the states in char. 18 could be amended: green (state 1), and reddish green (state 2)**			
QL	**(d)**	absent				Carrieri	1
		present				Gireoudii	9
21.		**Leaf blade: pubescence on upper side**					
QL	**(d) (e)**	absent				Calpantino, Toba	1
		present				Calpan Gold, Chapeado, Erick, (Major)	9
22.		**Leaf: surface**					
QL	**(d)**	smooth				Aby, Toba	1
		wrinkled				Chela, Flexuosa	2
23. (*)		**Petiole: length**					
QN	**(d)**	short				Tzapingo	3
		medium				Paul's Scarlet, Plena	5
		long				Toba, Wattiana	7
24. (+)		**Flower: calyx length**					
QN	**(f)**	short				Alex	3
		medium				San José	5
		long				Lupita	7

[a] Netherlands to consider proposing characteristic for color of variegation (secondary color)

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
25. **(*)**		**Flower: pedicel length**					
QN	**(f)**	short				Alex	3
		medium				Cris	5
		long				San José	7
26.		**Flower: type**					
QL	**(f)**	single				Edgar, Gloria, Punicea. Carrieri	1
		double				Masekii, Paul’s Scarlet	2
27. **(+)**		**Flower: diameter with petals pressed into horizontal position**					
QN	**(f)**	small				Aby, Poblano	3
		medium				Chela, Pingo	5
		large				Superior, Tequex	7
28.		**Flower: color of petals**					
PQ	**(f)**	white				Chapeada, Chela, Plena	1
		light pink				Masekii, Toba	2
		medium pink				Rubra Plena, Pink Corkscrew	3
		dark pink					4
		red				Paul’s Scarlet	5

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
29.		**Flower: color of base of anthers**					
PQ	**(f)**	green				Poblano, Superior	1
		yellow				Edgar, Gloria	2
		pink				Centenario	3
		red pink				San José	4
		purple				Chela	5
		dark purple				San Cristóbal	6
		brown				Tempranero, Tequex	7
30. **(+)**		**Flower: attitude of petals**					
QN	**(f)**	erect				Poblano, Tempranero	1
		semi erect				Chela	2
		horizontal				Edgar, Pingo, Superior	3
31.		**<u>Only varieties with flower type: single</u>: 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
32.		**Flower: color of anthers**	**DE: as there are no example varieties mentioned for the states 1, 6, 7, 11, and 12, the question may arise whether the particular states are definitely existing**				
PQ	**(f)**	white					1
		cream				Superior	2
		yellow				San José	3
		orange				Elvia	4
		pink				Robelo	5
		reddish					6
		purple					7
		light brown				San Cristóbal	8
		medium brown				Chela, Poblana	9
		dark brown				Pingo	10
		grey					11
		grey black					12
33. **(+)**		**Flower: shape of anther**					
PQ	**(f)**	circular				Betty	1
		elliptic				Aby, San José	2
		cordate				Carla	3

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
34. **(*)**		**Fruit: color**	DE: as there are no example varieties mentioned in some states, the question may arise whether the particular states are definitely existing	MX: the colors exist but we don't have varieties.			
PQ	**(g)**	light green				Epi, San Nicolás	1
		medium green					2
		yellow				Aurora, Tzapingo	3
		yellow and orange				Alex, Chapeado	4
		yellow and red				Carrierei, Elena	5
		orange				Ade, Huejo	6
		orange and red				Poblano	7
		medium red				Ara, (Grignonensis)	8
		dark red				Eli, (Ellwangeriana)	9
		purple					10
		black					11
35. **(+)**		**Fruit: general shape**					
PQ	**(g)**	conic				Ela	1
		ellipsoid				Santa Cata	2
		globose				Pingo	3
		obloid				Dany, (Grignonensis)	4
		obovoid				Erick, (Pedillelata)	5
36. **(+)**		**Fruit: presence of neck**					
QL	**(g)**	absent				Carla	1
		present				Lupita	9

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
37.		**Fruit: length**					
QN	**(g)**	short				Dany, Tzapingo	3
		medium				Epi	5
		long				Calpan Gold	7
38.		**Fruit: width**					
QN	**(g)**	narrow				Yesenia	3
		medium				Tequex	5
		broad				Carla	7
39. **(*)**		**Fruit: length/width ratio**					
QN	**(g)**	small				Ela	3
		medium				Erick, Robelo	5
		large				Alex, Natzi	7
40. **(+)**		**Fruit: cavity of eye basin**					
QL	**(g)**	closed				Dany, Robelo	1
		open				Karen	2
41. **(+)**		**Fruit: depth of eye basin**					
QN	**(g)**	very shallow				Candelaria, Mago	1
		shallow				Rob	3
		medium				Gloria	5
		deep				Chapeado	7
		very deep				Elvia	9

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
42.		**Fruit: main color of flesh**					
PQ	**(g)**	green				San Nicolás	1
		white				Epi	2
		light yellow				Superior	3
		medium yellow				Belén	4
		dark yellow				Azucena	5
		orange				Chela, Cris, Poblano	6
		red				Dany	7
43. **(*)**		**Fruit: glossiness**					
QL	**(g)**	absent				Cas, Eli	1
		present				Ara, (Grignonensis)	9
44.		**Fruit: density of lenticels**					
QN	**(g)**	very sparse				Robelo	1
		sparse				Mago	3
		medium					5
		dense				Iracema	7
		very dense				Paola	9

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
45.		**Fruit: texture of surface**	**TWO: To check whether should have the states absent or very low (1) strong (2)**	**DE: I propose to change the wording of the formerly proposed wording into "absent or smooth (1), moderate (2), rough (3)"; to my understanding the wording as formerly proposed does not fit.** **DE: I withdraw my former proposal to reword.**	**MX: Only to change medium (2) for moderate; since absent of texture is not suitable.**		
QN	**(g)**	smooth				Dany	1
		medium				San Nicolás	2
		rough				Tzingo	3
46.		**Fruit: aroma**					
QN	**(g)**	absent or very weak				Chela	1
		medium				Elvia	2
		strong				Orem	3
47.		**Endocarp: number**					
QN	**(g)**	few				Natzi, Santa Cata	1
		medium				Edgar	2
		many				Centenario	3
48. **(+)**		**Endocarp: length**					
QN	**(g)**	short				Pingo	3
		medium				Natzi	5
		long				Chela	7
49. **(+)**		**Endocarp: width at broadest part**					
QN	**(g)**	narrow				Ade	3
		medium				San Cristóbal	5
		broad				Carla	7

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
50. **(*)**		**Endocarp: width/length ratio**					
QN	**(g)**	small				Belén, Lila, Yesenia	3
		medium				Calpar, Candelaria, Yash	5
		large				Ixayoc	7
51.		**Time of flowering**					
QN		early				Eli	3
		medium				Centenario	5
		late				Chapeado	7
52.		**Duration of flowering**	**MX : to consider to delete. It was checked a there is low variation between varieties**	**MX: agree to delete**			
QN		short					3
		medium					5
		long					7
53.		**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) Plant, stem and branch: DE: All observations should be made on vegetative current season's shoots after growth.

(b) Plant: All observations should be made on foliated plants in the spring.

(c) Shoot and internodes: DE: All observations should be made on vegetative current season's shoots 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 fruit ripening.

8.2 Explanations for individual characteristics

Ad. 1: Plant: habit

1
fastigate

2
upright

3
spreading

4
semi drooping

5
drooping

6
weeping

Ad. 2: Plant: shape of canopy

1
semi globose

2
ovoid

3
oblong

4
globose

5
transverse ellipsoid

6
obovoid

Ad. 4: Plant: growth type

1
shrub

2
intermediate

3
tree

Ad. 5: Plant: candelabrous branching

1
absent

2
present

Ad. 15: Leaf blade: margin

1
entire

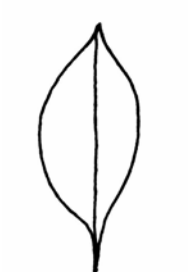
2
crenate

3
bicrenate

4
serrate

5
biserrate

Ad. 16: Leaf blade: lobes



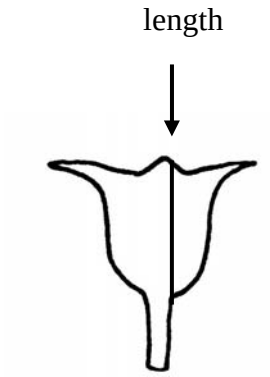
1
absent

9
present

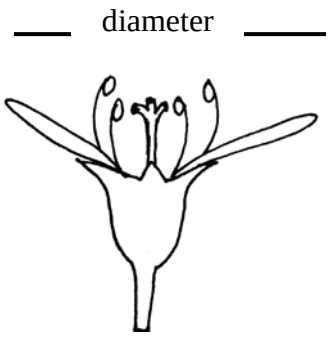
Ad. 17: Leaf blade: depth of lobes
(DE: I question the need of a drawing; MX: supports DE comment)

to be provided

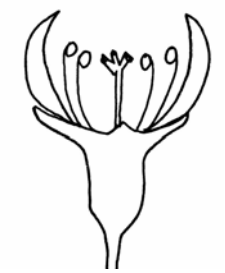
Ad. 24: Flower: calyx length



Ad. 27: Flower: diameter with petals pressed into horizontal position.

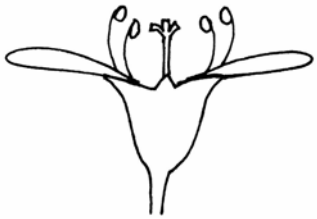


Ad. 30: Flower: attitude of petals



1
erect

2
semi erect



3
horizontal

Ad. 33: Flower: shape of anther

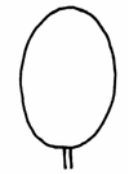
1
circular

2
elliptic

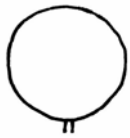
3
cordate

Ad. 35: Fruit: general shape

1
conic



2
ellipsoid

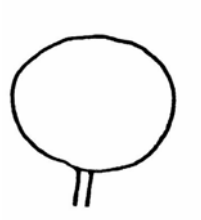


3
globose

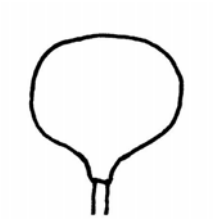
4
obloid

5
obovoid

Ad. 36: Fruit: presence of neck



1
absent



9
present

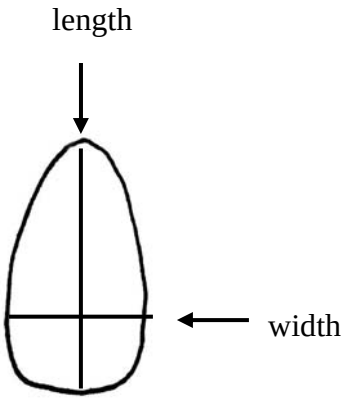
Ad. 40: Fruit: cavity of eye basin

1
closed

2
open

Ad. 41: Fruit: depth of eye basin

Ad. 48: Endocarp: length
Ad. 49: Endocarp: width at broadest part



9. Literature

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

Hillier, H.G. 1992: "Hillier's Manual of Trees and Shrubs". 6th ed. Romsey, GB. 575 p.

Phipps, J. B. 1997: "Monography of Northern Mexican *Crataegus* (Rosaseae, subfam. Maloideae)". The University of Western Ontario. Departament of Plant Science. London, Ontario, CA. 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	Botanical 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)	**Plant: habit**		
	fastigate	Ergo, Gaca, Pingo	1[ ]
	upright	Azucena, Calpar, Tequex,	2[ ]
	spreading	Atexcac	3[ ]
	semi drooping	Candelaria, Chico	4[ ]
	drooping		5[ ]
	weeping	Pendula	6[ ]
5.2 (7)	**Shoot: presence of thorns**		
	absent	Edgar, Epi	1[ ]
	present	Chela, Pingo, Superior	9[ ]
5.3 (12)	**Leaf blade: length**		
	short	Belén, Mutabilis	3[ ]
	medium	Epi	5[ ]
	long	Carrierei, Edgar	7[ ]
5.4 (23)	**Petiole: length**		
	short	Tzapingo	3[ ]
	medium	Paul’s Scarlet, Plena	5[ ]
	long	Toba, Wattiana	7[ ]
	TWO to provide 2 additional characteristics for ornamental varieties		

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

	Characteristics	Example Varieties	Note
5.5 (34)	**Fruit: color**		
	light green	Epi, San Nicolás	1[ ]
	medium green		2[ ]
	yellow	Tzapingo	3[ ]
	yellow and orange	Alex, Chapeado	4[ ]
	yellow and red	Elena	5[ ]
	orange	Ade, Huejo	6[ ]
	orange and red	Poblano	7[ ]
	medium red	Ara	8[ ]
	dark red	Eli	9[ ]
	purple		10[ ]
	black		11[ ]
5.6 (39)	**Fruit: length/width ratio**		
	small	Ela	3[ ]
	medium	Erick, Robelo	5[ ]
	large	Alex, Natzi	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

To consider adding a subsection to indicate type: ornamental or fruit

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]