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INTERNATIONAL UNION FOR THE PROTECTION OF NEW VARIETIES OF PLANTS
GENEVA

**TECHNICAL WORKING PARTY
FOR
FRUIT CROPS**

**Thirty-Second Session
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WORKING PAPER ON REVISED TEST GUIDELINES FOR LEMONS, LIMES AND
HYBRIDS

(Citrus limon (L.) Burm.f. (Lemons), *Citrus latifolia* Tan. (Acid Limes),
Citrus limettiodes Tan. (Sweet Limes), *Citrus aurantifolia* (Christm. ex Panz.) Swingle
(Mexican Limes), *Citrus jambhiri* Lush. (Rough Lemons)

Document prepared by experts from Spain

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I. Subject of these Guidelines

These Test Guidelines apply to all vegetatively propagated varieties for fruit production and rootstock varieties of the following **species of the group lemon and limes** of the genus *Citrus* L., **and their hybrids**:

LEM: *Citrus limon* (L.) Burm. f. (Lemons)

LAL: *Citrus latifolia* Tan. (Acid Limes)

SWL: *Citrus limettioides* Tan. (Sweet Limes)

SAL: *Citrus aurantifolia* (Christm. ex Panz.) Swingle (Mexican lime)

RLM: *Citrus jambhiri* Lush. (Rough Lemons)

These Test Guidelines may be used for the testing of varieties of other citrus groups for which UPOV Test Guidelines are not yet available, after having studied which of the characteristics indicated show reliable and useful results and whether further characteristics should be added.

II. Material Required

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

bud sticks of 6 to 10 mm in diameter (one year old), each cut just behind a typical fruit, sufficient to establish 10 plants or, if required by the competent authorities, 10 one-year-old grafted trees. **In the case of rootstock varieties, rooted cuttings or polyembryonic seeds may be required in addition.**

2. The plant material supplied should be visibly healthy, not lacking in vigor or affected by any important pests or diseases. It should preferably not be obtained from *in vitro* propagation. If it has been produced by *in vitro* propagation this fact has to be stated by the applicant.

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

III. Conduct of Tests

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

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

3. The tests should be carried out under conditions ensuring normal growth. As a minimum, each test should include a total of 5 trees. Separate plots for observation and for

measuring can only be used if they have been subject to similar environmental conditions. A standard specified rootstock should be used for each group.

4. Additional tests for special purposes may be established.

IV. Methods and Observations

1. **Unless otherwise stated**, all observations **determined by measurement, weighing or counting** should be made on 5 plants or 10 typical parts, 2 from each of 5 plants.
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.
3. All observations should be made on plants of the same age not less than 3 years old. The age of the plants should be specified.
4. The observation on the **growth habit of the tree** should be made immediately after harvest.
5. All observations on the young **leaf** should be made **on actively growing spring flush**.
6. All observations on the leaf should be made on fully developed leaves on the middle third of the youngest spring flush branch sections not showing signs of active growth.
7. Unless otherwise indicated, all observations on the flower bud and the flower should be made on the terminal flower bud and flower, at the time of full flowering of the variety.
8. All observations on the flower bud should be made when the petal tips are just visible.
9. All observations on the open flower should be made on the first day of opening.
10. **Unless otherwise indicated, for the observations on the fruit, 10 typical fruits should be selected out from the spring or main blooming of the year of a minimum of 20 fruits from 5 trees.** All observations on the fruit should be made at the stage of optimum ripeness. This stage should be determined by the ratio total soluble solids/acid content of juice. The fruit should be tested weekly and harvested as soon as this stage has been reached.
11. All fruits for observation should be taken from the periphery of the tree and fruit misformed as a result of clustering should not be sampled.
12. All observations on the **fruit surface** and **on** the texture and thickness of the rind should be made at the middle, between the base and apex of the fruit.
13. The observation on the oiliness of the fruit rind should be made, **by peeling the fruit**, within 3 to 7 days after harvesting. **(To delete for this group?)**
14. All observations on the flesh of the fruit should be made on a cross section through the middle of the fruit.
15. **Unless otherwise stated**, all observations on the seed should be made on the fresh seed.

V. Grouping of Varieties

1. The collection of varieties to be grown should be divided into groups to facilitate the assessment of distinctness. In the first place the collection should be divided into the groups mentioned in Chapter I (1).
2. In addition, characteristics which are suitable for grouping purposes are those which are known from experience not to vary, or to vary only slightly, within a variety. Their various states of expression should be fairly evenly distributed throughout the collection.
3. It is recommended that the competent authorities use the following characteristics for grouping fruit varieties:
 - (a) Young leaf: presence of anthocyanin coloration (characteristic 4)
 - (b) Fruit: length (characteristic 33)
 - (c) Fruit: presence of neck (characteristic 41)
 - (d) Fruit: presence of nipple (characteristic 57)
 - (e) Fruit surface: predominant color (characteristic 72)

VI. Characteristics and Symbols

1. To assess distinctness, uniformity and stability, the characteristics and their states as given in the Tables of Characteristics should be used.
2. Notes (numbers), for the purposes of electronic data processing, are given opposite the states of expression for each characteristic.
3. Each example variety is followed by the abbreviation of its group in brackets.
4. Legend:
 - (*) Characteristics that should be used on all varieties in every growing period over which examinations are made and always be included in the variety descriptions, except when the state of expression of a preceding characteristic or regional environmental conditions render this impossible. (**Deleted sentence for rootstock**).
 - (+) See Explanations on the Table of Characteristics in Chapter VIII.
5. Abbreviations:

LEM: *Citrus limon* (L.) Burm. f. (Lemons)

LAL: *Citrus latifolia* Tan. (Acid Limes, Lime Bearss)

SWL: *Citrus limettioides* Tan. (Sweet Limes)

SAL: *Citrus aurantifolia* (Christm. ex Panz.) Swingle (Mexican lime)

RLM: *Citrus jambhiri* Lush. (Rough Lemons)

HLL: HYBRIDS LIKE LEMON OR LIMES.

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

	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
1.	Tree: growth habit					
(*)						
[2.]	upright					1
	spreading				Verna	2
	drooping					3
2.	Tree: density of spines					
	absent or very sparse				Colima 02	1
	sparse					2
	dense					3
3.	Tree: length of spines					
	short				Eureka	3
	medium				Fino	5
	long				Chaparro	7
4.	Young leaf: presence of anthocyanin coloration					
(*)						
	absent				Flor de Arancio	1
	present				Verna	9
5.	Young leaf: intensity of anthocyanin coloration of tip					
	weak				Bearss	3
	medium				Verna	5
	strong					7

English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
6. Leaf blade: length					
[5.] <i>(apical leaflet in case of compound leaf)</i>					
short				Mexicana	3
medium				Bearss	5
long				Fino	7
7. Leaf blade: width					
[6.]					
narrow				Mexicana	3
medium				Bearss	5
broad				Fino	7
8. Leaf blade: ratio length/ width					
[7.]					
small					3
medium					5
large					7
9. Leaf blade: shape on cross section					
[8.]					
straight or very weakly concave					1
weakly concave					2
strongly concave					3

English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
10. Leaf blade: twisting					
[9.]					
absent or very weakly expressed				Fino	1
weakly expressed				Eureka	2
strongly expressed					3
11. Leaf blade: blistering	Not for this Group				
[10.]					
absent or very weakly expressed					1
weakly expressed					2
strongly expressed					3
12. Leaf blade: intensity of green color					
[11.]					
light					3
medium				Fino	5
dark					7
13. Leaf blade: pubescence on lower side	Not for this Group				
[12.]					
absent or very weakly expressed					1
weakly expressed					2
strongly expressed					3
14. Leaf blade: firmness					
[13.]					
weak					3
medium				Fino	5
strong					7

MEX, june 2001: to delete?

English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
15.					
Leaf blade: undulation of margin					
[14.]					
absent or very weakly expressed				Fino	1
weakly expressed				Eureka	2
strongly expressed					3
16.					
Leaf blade: incisions of margin					
[15.]					
<i>entire</i>					1
<i>sinuate</i>					2
<i>crenate</i>					3
<i>dentate</i>					4
17.					
Leaf blade: shape of apex					
(+)					
[16.]					
acuminate					1
acute					2
obtuse					3
rounded					4
<i>emarginate ?</i>					5
18.					
Leaf blade: emargination at tip					
(+)					
[17.]					
absent <i>or very shallow</i>					1
<i>shallow</i>					2
deep					3

	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
19.	Petiole: length					
[18.]	short					3
	medium				Fino	5
	long					7
20.	Petiole: presence of wings					
[19.]	absent				Fino, Colima 02	1
	present					9
21.	Petiole: width of wings					
[19a.]	narrow					3
	medium					5
	broad					7
22.	Flower bud: presence of anthocyanin coloration					
	absent				Flor de Arancio	1
	present				Verna	9
23.	Flower bud: intensity of anthocyanin coloration					
	weak				Bearss	3
	medium					5
	strong				Verna	7
24.	Flower: diameter of calyx					
[23.]	small					3
	medium					5
	large					7

	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
25.	Flower: length of petal					
[24.]	short					3
	medium					5
	long					7
26.	Flower: width of petal					
[25.]	narrow					3
	medium					5
	broad					7
27.	Flower: ratio length/width of petal					
new	small					3
	medium					5
	large					7
28.	Flower: length of stamens					
[27.]	short					3
	medium					5
	long					7
JP: new 28 1: Flower arrangements of stamens: separate (1) /partly united (2)/ fully united (3)						
29.	Anther: color					
[28.]	white					1
	light yellow					2
	medium yellow				Verna	3
29. bis	Stamens: basal union					
	absent				Fino	1
	present					9

	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
30. (*)	Anther: viable pollen					
[29.]	absent				Bears	1
	present					9
31.	Style: length					
[31.]	short					3
	medium					5
	long					7
JP: new 31a : Style: shape straight (1)/arched (2)/kinked (3)						
32.	Infructescence: clustering of fruits					
	absent				Fino	1
	present				Eureka	9
33. (*)	Fruit: length					
[34.]	short				Mexicana	3
	medium				Bearss	5
	long				Eureka	7
34. (*)	Fruit: diameter					
[35.]	small				Mexicana	3
	medium				Lunario Ambrojo	5
	large				Fino	7
35. (*)	Fruit: ratio length/diameter					
[36.]	small				Bearss	3
	medium				Fino	5
	large				Verna	7

English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
36. (*)	Fruit: position of broadest part				
[37.]	towards stalk end				1
	at middle			Fino	2
	towards distal end				3
37.	Fruit: circumference Not for this Group				
38. (+)	Fruit: general shape of proximal part (excluding neck, collar and depression at stalk end)				
[39.]	flattened				1
	slightly rounded				2
	strongly rounded				3
	tapered				4
39. (*)	Fruit: presence of depression at stalk end				
(+)	absent			Lunario	1
[40.]	present			Messina	9
40.	Fruit: depth of depression at stalk end Not for this group				
[41.]	shallow			Melogold, Nelruby, Oroblanco, Ruby Henninger	3
	medium			Ray Ruby	5
	deep				7

English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
41.	Fruit: presence of neck				
(*)					
(+)					
	absent			Lunario	1
	present			Verna	9
42.	Fruit: length of neck				
	short			Fino	3
	medium			Lisbon Frost	5
	long			Verna	7
43.	Fruit: thickness of neck	Not for this Group			
44.	Fruit: presence of constriction at stalk end	Not for this Group			
(+)					
45.	Fruit: expression of constriction at stalk end	Not for this Group			
46.	Fruit: number of radial grooves at stalk end	Not for this Group			
	absent or very few				1
	few				2
	many				3
47.	Fruit: length of radial grooves at stalk end	Not for this Group			
	short				3
	medium				5
	long				7

	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
48.	Fruit: local depression at stalk attachment (necked varieties only)	Not for this Group				
(+)						
49.	Fruit: presence of collar	Not for this Group				
50.	Fruit: height of collar	Not for this Group				
51.	Fruit: diameter of collar	Not for this Group				
52.	Fruit: abscission layer between floral disc and fruit	Not for this Group				
[49.]	absent or very weakly developed					1
	weakly developed					2
	strongly developed					3
53.	Fruit: general shape of distal part (excluding nipple, protruding or bulging of navel and depression at distal end)	Not for this Group				
(+)						
[50.]	flattened				Messina	1
	slightly rounded				Eureka	2
	strongly rounded				Verna	3
54.	Fruit: presence of depression at distal end	Not for this Group				
	absent					1
	present					9

	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
55.	Fruit: depth of depression at distal end	Not for this Group				
	shallow					3
	medium					5
	deep					7
56.	Fruit: diameter of depression at distal end	Not for this Group				
	small					3
	medium					5
	large					7
57. (*) (+)	Fruit: presence of nipple					
	absent				Mexicana, Bearss	1
	present				Verna lemon	9
58.	Fruit: prominence of nipple					
	weak				Messina	1
	medium				Fino	2
	strong				Verna	3
59.	Fruit: presence of areola	Not for this Group				
	absent					1
	present					9
60. (+)	Fruit: type of areola	Not for this Group				
	smooth					1
	grooved					2
	ridged					3

English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
61.	Fruit: conspicuousness of areola	Not for this Group			
[58.]	weak				1
	medium				2
	strong				3
62.	Fruit: development of areola	Not for this Group			
[59.]	not complete				1
	complete				2
63.	Fruit: diameter of areola	Not for this Group			
[60.]	small				3
	medium				5
	large				7
64.	Fruit: diameter of stylar scar				
[61.]	small				3
	medium				5
	large				7
64 bis	Fruit: persistence of style				
[62.]	absent				1
	present				9
65.	Fruit: protruding stylar point	Not for this Group			
66.	Fruit: persistence of style	Not for this Group			
67.	Fruit: presence of navel opening	Not for this Group			

	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
68.	Fruit: diameter of navel opening	Not for this Group				
69.	Fruit: bulging of navel	Not for this Group				
70.	Fruit: presence of radial grooves at distal end					
[68.]	absent					1
	present					9
71.	Fruit: expression of radial grooves at distal end					
[68a]	weak					3
	medium					5
	strong					7
72.	Fruit surface: predominant color					
	light yellow				Bearss	3
	medium yellow				Fino	5
	yellow orange				Canaria	7
	variegated				Variegado	9
Mex, to add a new expression : green(1) for Mexicana, Colima 02						
73.	Fruit surface: presence of pubescence	Not for this Group				
74.	Fruit surface: intensity of pubescence	Not for this Group				

English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
75. Fruit surface: glossiness (*) [70.]					
absent or very weak					1
<i>weak</i>					3
medium					5
<i>strong</i>					7
very strong					9
76. Fruit surface: roughness [71.]					
smooth				Lunario	3
medium				Fino	5
rough				Campisi	7
77. Fruit surface: evenness of size of oil glands [72.]					
all more or less the same size					1
larger ones interspersed by smaller ones					2
78. Fruit surface: size of larger oil glands [73.]					
small					3
medium					5
large					7

English	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
83. Fruit surface: density of pebbling on oil glands	Not for this Group			
[77a.] sparse				3
medium				5
dense				5
84. Fruit surface: degree of pebbling on oil glands	Not for this Group			
[78.] weak				3
medium				5
strong				7
85. Fruit rind: thickness (*)				
[80.] thin			Messina, Mexicana	3
medium				5
thick			Verna	7
86. Fruit rind: adherence to flesh (*)	Not for this Group			
[82.] weak				3
medium				5
strong				7
87. Fruit rind: strength [83.]	Not for this Group			
88. Fruit rind: oiliness				
[84.]				
dry				3
medium				5
oily				7

English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota	
89.	Fruit rind: conspicuousness of oil glands on inner surface	Not for this Group				
90. [86.]	Fruit: color of albedo	Not for this Group				
	white				1	
	light pink				2	
	medium pink				3	
91.	Fruit: density of albedo	Not for this Group				
92. [88.]	Fruit: amount of albedo adhering to flesh (strands excluded)	Not for this Group				
93.	Fruit: presence of albedo strands	Not for this Group				
94.	Fruit: amount of albedo strands	Not for this Group				
95.	Fruit: differently colored specks in flesh	Not for this Group				
96.	Fruit: bicolored segments	Not for this Group				
[91.]	absent				1	
	present				9	
97. (* [92.]	Fruit: main color of flesh					
	light green			Bearss	3	
	light yellow			Eureka	5	
	pink			Variegado	7	
MEX : to add expression green (1) for Mexicana						

English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
98. Fruit: filling of core					
[93.]					
absent or very sparse					1
sparse				Messina	3
medium				Lunario	5
dense				Eureka	7
very dense				Fino	9
99. Fruit: diameter of core					
[94.]					
small				Fino	3
medium					5
large				Santa Teresa	7
100. Fruit: rudimentary segments					
[95.]					
absent or very weakly expressed					1
weakly expressed					2
strongly expressed					3
101. Fruit: number of well developed segments					
[96.]					
few					3
medium					5
many					7

English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
102. Fruit: coherence of adjacent segment walls					
[98.] weak					3
medium					5
strong					7
103. Fruit: strength of segment walls					
[99.] weak					3
medium					5
strong					7
104. Fruit: length of juice vesicles					
[100] short					3
medium					5
long					7
105. Fruit: thickness of juice vesicles					
[100a] thin					3
medium					5
thick					7
106. Fruit: conspicuousness of juice vesicle walls					
[101.] low					3
medium					5
high					7

English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
107. Fruit: coherence of juice vesicles					
[102.]					
weak					3
medium					5
strong					7
108. (*) Fruit: presence of navel viewed <u>internally</u>		Not for this Group			
109. Fruit: size of navel (viewed internally)		Not for this Group			
110. Fruit: juice content					
[106.]					
low					3
medium					5
high					7
111. Fruit juice: total soluble solids					
[107.]					
low					3
medium					5
high					7
112. Fruit juice: acidity					
[108.]					
low					3
medium					5
high					7

English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
113. Fruit: strength of fibre [109.]					
weak					3
medium					5
strong					7
114. Fruit: number of seeds (<i>autopollinated flowers</i>) [*] [110.]					
absent or very few				Colima 03, Bearss	1
few					3
medium					5
many					7
very many					9
MEX june 2001: not autopollinated flowers, but open pollinated					
115. Seed: polyembryony [*] [111.]					
absent					1
present				Eureka	9
116. Seed: length	Not for this Group				
[113.] short					3
medium					5
long					7
117. Seed: width	Not for this Group				
[114.] narrow					3
medium					5
broad					7

English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
118.	Seed: surface (when fresh)		Not for this Group		
[115.]	smooth				1
	veined				2
	wrinkled				3
119.	Seed: prominence of veins and/or wrinkles (as for 118)		Not for this Group		
[116.]	weak				3
	medium				5
	strong				7
120.	Seed: external color (as for 118)		Not for this Group		
[117.]	greenish				1
	whitish				2
	yellowish				3
	pinkish				4
	brownish				5
121.	Seed: color of inner seed coat (as for 118)		Not for this Group		
[118.]	white				1
	light yellow				2
	light brown				3
	brown				4
	dark brown				5
	red				6
	purple				7

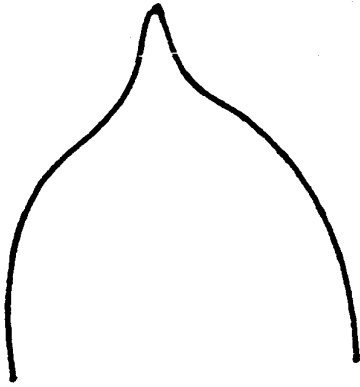
English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
122. Seed: color of cotyledons (as for 118, polyembryonic varieties only)	Not for this Group				
[119.] white					1
cream					2
light green					3
dark green					4
123. Seed: external color when <u>dry</u>	Deleted from all groups				
[120.] greenish					1
whitish					2
yellowish					3
brownish					4
124. Flowering habit (*)	Not for this Group				
flowering once				Fino	1
flowering more than once				Lunario, Mexicana	2
125. Time of maturity of fruit for consumption (*) [122.]					
early				Berass	3
medium				Fino	5
late				Verna	7
126. Plant: parthenocarpy (*) [122a.]					
absent					1
present				Bearss	9

MEX june 2001: must be placed on fruit characters

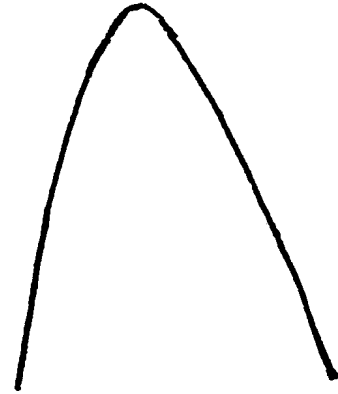
English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
127. new	Plant: self- incompatability				
	absent				1
	present			Bearss	9

VIII. Explanations on the Table of Characteristics

Ad. 17: Leaf blade: shape of apex



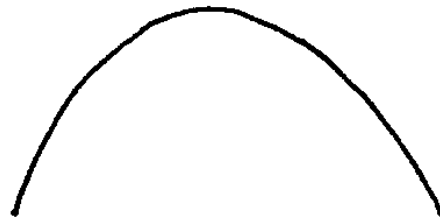
1
acuminate



2
acute

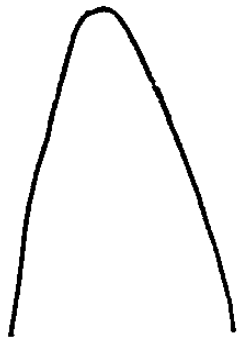


3
obtuse

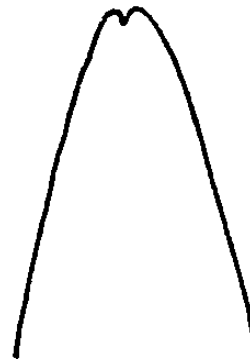


4
rounded

Ad. 18: Leaf blade: emargination at tip



1
absent



9
present

????????????????????????????????

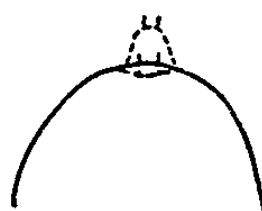
Ad. 38: Fruit: general shape of proximal part (excluding neck, collar and depression at stalk end)



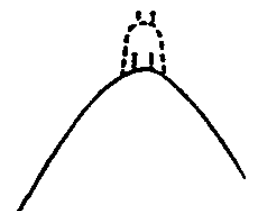
1
flattened



2
slightly rounded

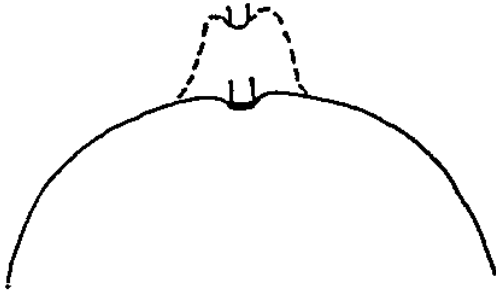


3
strongly rounded

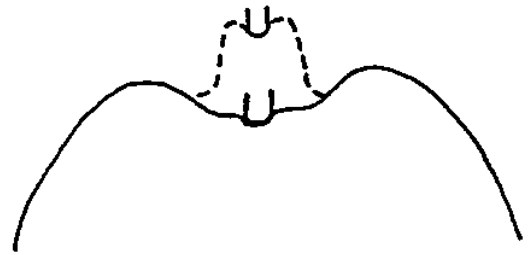


4
tapered

Ad. 39: Fruit: presence of depression at stalk end

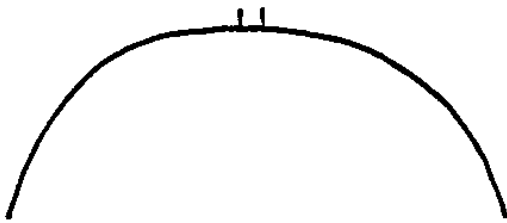


1
absent

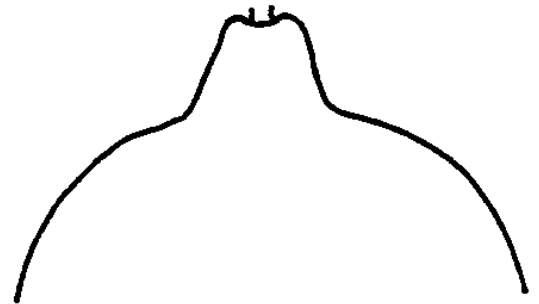


9
present

Ad. 41: Fruit: presence of neck

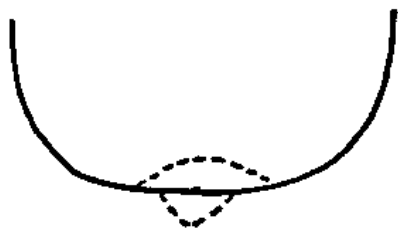


1
absent



9
present

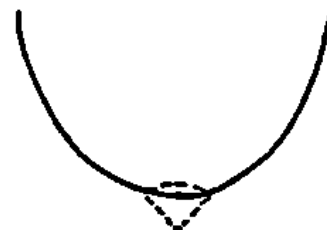
Ad. 53: Fruit: general shape of distal part (excluding nipple, protruding or bulging of navel and depression at distal end)



1
flattened



2
slightly rounded



3
strongly rounded

Ad. 57: Fruit: presence of nipple



1
absent



9
present

LIST OF EXAMPLE VARIETIES FOR LEMON AND LIMES

Variety denomination	Group or species	Observations
BEARSS	LAL	Tahití, Lima de Persia
CANARIA	SWL	
CHAPARRO	LEM	
EUREKA	LEM	
CAMPISI	LEM	Feminello Campisi
FLOR DE ARANCIO	LEM	Feminello Flor de arancio
FINO	LEM	
LISBON FROST	LEM	
LUNARIO AMBROJO	LEM	
MESSARA	LEM	
MESSINA	LEM	
MEXICANA	SAL	Mexican Lime, limón mexicano
SANTA TERESA	LEM	
VARIEGADO	LEM	
VERNA	LEM	

List of Groups of Citrus VarietiesGROUP

1.- MANDARINS AND THEIR HYBRIDS

SAT: *Citrus unshiu* Marc. (Satsumas)CLE: *Citrus clementina* Hort. ex Tan. (Clementines)MMN: *Citrus deliciosa* Ten. (Mediterranean Mandarins)PMN: *Citrus reticulata* Blanco (Ponkan Mandarins)

TNL: Tangerine x (Grapefruit or Pummelo) (Tangelos)

TNR: Tangerine x Orange (Tangors)

HOM: Other Mandarin Hybrids

2. ORANGES AND THEIR HYBRIDS

SWO: *Citrus sinensis* (L.) Osbeck (Sweet Oranges)SOR: *Citrus aurantium* L. (Sour Oranges)

HOR: Other Orange Hybrids

3. LEMONS AND LIMES AND THEIR HYBRIDS

LEM: *Citrus limon* (L.) Burm.f. (Lemons)LAL: *Citrus latifolia* Tan. (Acid Limes, Lime Bearss)SWL: *Citrus limettioides* Tan. (Sweet Limes)SAL: *Citrus aurantifolia* (Christm. ex Panz.) Swingle (Mexican Limes)RLM: *Citrus jambhiri* Lush. (Rough Lemons)

HOL: Other Lemon and Lime Hybrids

4. GRAPEFRUIT AND PUMMELOS AND THEIR HYBRIDS

GRA: *Citrus paradisi* Macfad. (Grapefruit)PUM: *Citrus grandis* (L.) Osbeck (Pummelos)

5. TRIFOLIATE ORANGES AND THEIR HYBRIDS

PON: *Poncirus* Raf. (Trifoliate Oranges)CTG: *Poncirus* x Sweet Orange (Citranges)CML: *Poncirus* x Grapefruit (Citrumelos)CTL: *Poncirus* x Lemons (Citremons)CTI: *Poncirus* x Mandarin (Citrandarins)HOP: Other *Poncirus* Hybrids**TWF comment 2000: To supply common names in all four languages.**

IX. Literature

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X. Technical Questionnaire

	Reference Number (not to be filled in by the applicant)
TECHNICAL QUESTIONNAIRE to be completed in connection with an application for plant breeders' rights	
<p>1. <u>GROUP</u></p> <p>LEMONS AND LIMES AND THEIR HYBRIDS</p> <p>LEM: <i>Citrus limon</i> (L.) Burm.f. (Lemons) []</p> <p>LAL: <i>Citrus latifolia</i> Tan. (Acid Limes) []</p> <p>SWL: <i>Citrus limettioides</i> Tan. (Sweet Limes) []</p> <p>SAL: <i>Citrus aurantifolia</i> (Christm. ex Panz.) Swingle (Mexican Limes) []</p> <p>RLM: <i>Citrus jambhiri</i> Lush. (Rough Lemons) []</p> <p>HLL: Hybrids like lemon or limes /or LLL: lemons and limes like varieties []</p>	
<p>2. Applicant (name and address)</p>	
<p>3. Proposed denomination or breeder's reference</p>	

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

4.1 Origin

(a) Seedling of unknown parentage []

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

– Seed bearing parent (indicate parent)

.....

– Pollen parent (indicate parent)

.....

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

.....

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

..... []

Origin of mutation: Natural() Inducted() by.....

(e) Discovery (indicate where and when)

..... []

4.2 *In vitro* propagation

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

yes []

no []

4.3 Pollenizer

Good pollenizers of the candidate variety are the following varieties:

.....(**sin interés en limoneros**) Deleted?

4.4 Virus status

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

.....

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

.....

.....

- (c) The virus status is unknown []

4.5 Other information

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

Characteristics	Example Varieties	Note
5.1 Young leaf: presence of anthocyanin coloration (4)		
absent	Flor de Arancio	1[]
present	Verna	9[]
5.2 Young leaf: intensity of anthocyanin coloration of tip (5)		
weak	Bearss	3[]
medium	Verna	5[]
strong		7[]
5.3 Fruit: length (33)		
short	Mexicana	3[]
medium	Bearss	5[]
long	Eureka	7[]
5.4 Fruit: diameter (34)		
small	Mexicana	3[]
medium	Lunario Ambrojo	5[]
large	Fino	7[]
5.5 Fruit: presence of neck (41)		
absent	Lunario	1[]
present	Verna	9[]
5.6 Fruit: presence of nipple (57)		
absent	Mexicana, Bearss	1[]
present	Verna lemon	9[]

Characteristics	Example Varieties	Note	
5.7 Fruit surface: predominant color (72)			
light yellow	Bearss	3[]	
medium yellow	Fino	5[]	
yellow orange	Canaria	7[]	
variegated	Variegado	9[]	
5.9 Fruit: main color of flesh (97)			
light green	Bearss	3[]	
medium yellow	Eureka	5[]	
pink	Variegado	7[]	
5.11 Time of maturity of fruit for consumption (125)			
early	Bearss	3[]	
medium	Fino	5[]	
late	Verna	7[]	
5.12 Plant: parthenocarpy ??? (126)			
absent		1[]	
present	Bearss	9[]	
6. Similar varieties and differences from these varieties			
Denomination of similar variety	Characteristic in which the similar variety is different ^{o)}	State of expression of similar variety	State of expression of candidate variety
<p>^{o)} In the case of identical states of expressions of both varieties, please indicate the size of the difference.</p>			

