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GENEVA

**TECHNICAL WORKING PARTY  
FOR  
FRUIT CROPS**

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WORKING PAPER ON REVISED TEST GUIDELINES FOR TRIFOLIATA ORANGES  
AND THEIR HYBRIDS  
(*Poncirus trifoliata* (L.) Raf. (Trifoliata Oranges))

*Document prepared by experts from Spain*

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## I. Subject of these Guidelines

1. These Test Guidelines apply to all vegetatively propagated **rootstock varieties** of the following **species of the group trifoliata oranges** of the genus *Poncirus* (L.) **and their hybrids**:

<b>PON:</b>	<i>Poncirus trifoliata</i> (L.) Raf. - Trifoliata Oranges
<b>CTG:</b>	<b>Poncirus x Sweet orange - Citrange</b>
<b>CML:</b>	<b>Poncirus x Grapefruit - Citrumelo</b>
<b>CTL:</b>	<b>Poncirus x Lemon - Citremon</b>
<b>CTI:</b>	<b>Poncirus x Mandarin - Citrandarin</b>

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 or, in addition, rooted cuttings or polyembryonic seeds.

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 the tree** should be made immediately after harvest.

5. All observations on the young **leaf** should be made **on the 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. 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** of the texture and thickness of the rind should be made at the middle, between the base and apex of the fruit.

13. **Deleted.**

14. All observations on the flesh of the fruit should be made on a cross section through the middle of the fruit.

15. **Unless stated otherwise**, 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: **(Changed for group 5)**
  - (a) Leaf: caducity (characteristic 5a)
  - (b) Adult leaf: number of leaflets (characteristic 5b)
  - (c) Fruit surface: presence of pubescence (characteristic 73)
  - (d) Fruit: number of seeds (characteristic 114)
  - (e) Seed: polyembryony (characteristic 115)

## 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.
  - (+) See Explanations on the Table of Characteristics in chapter VIII.
5. Abbreviations

PON:	<i>Poncirus trifoliata</i> (L.) Raf. - Trifoliata Oranges
CTG:	<b>Poncirus x Sweet orange - Citrange</b>
CML:	<b>Poncirus x Grapefruit - Citrumelo</b>
CTL:	<b>Poncirus x Lemon - Citremon</b>
CTI:	<b>Poncirus x Mandarin - Citrandarin</b>
OHP :	<b>Other Poncirus Hybrids</b>

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

English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
<b>1. Tree: growth habit (*)</b>					
[2.] upright				<i>Poncirus trifoliata</i>	1
spreading				CPB 4475	2
drooping					3
<b>2. Tree: density of spines</b>					
[3.] absent or very sparse					1
sparse					2
dense				<i>Poncirus trifoliata</i>	3
<b>3. Tree: length of spines</b>					
short					3
medium					5
long				<i>Poncirus trifoliata</i>	7
<b>3b. Adult branches: lenticels</b>					
weakly expressed					3
well expressed					5
strongly expressed				Cunningham	7
<b>4. Young leaf: presence of anthocyanin coloration of tip (ef tip?) (*)</b>					
[4.] absent				Troyer	1
present					9

English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
<b>5. Young leaf: intensity of anthocyanin coloration of tip (<i>of tip?</i>)</b>					
[4a.] weak					3
medium					5
strong					7
<b>5a. Leaf: caducity</b>					
perennial				CPB 4475	1
partially caducous				Troyer	2
caducous				<i>Poncirus trifoliata</i>	3
<b>5b. Adult leaf: number of leaflets</b>					
one only					1
variable				Troyer	2
three				<i>Poncirus trifoliata</i>	3
<b>6. Leaf blade: length (apical leaflet in case of compound leaf)</b>					
[5.] short					3
medium					5
long					7
<b>6a. Leaf blade: length (lateral leaflets in case of compound leaf)</b>					
short					3
medium					5
long					7

English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
<b>7. Leaf blade: width</b>					
[6.] narrow					3
medium					5
broad					7
<b>7a. Leaf blade: Leaf: new width of blade (as for 6a)???</b>					
narrow					3
medium					5
broad					7
<b>8. Leaf blade: ratio length/width</b>					
[7.] small				<i>Poncirus trifoliata</i>	3
medium					5
large					7
<b>8a. Leaf blade: ratio new length/width of blade (as for 6a) ???</b>					
small				<i>Poncirus trifoliata</i>	3
medium					5
large					7
<b>8b. Leaf blade: ratio new length of blade of apical leaflet/length of blade of lateral leaflets</b>					
small					3
medium					5
large					7



English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
<b>9. Leaf blade: shape in cross section (<del>in</del> <del>cross-section</del>?) (as for 6 and 6a)</b>					
[8.]	straight or very weakly concave				1
	concave to upper side of blade ( <i>weakly concave?</i> )				2
	concave to lower side of blade ( <i>strongly concave?</i> )				3
<b>9a. Leaf blade: shape of new blade in longitudinal section (as for 6 and 6a)</b>					
[8.]	straight				1
	concave to upper side of blade				2
	concave to lower side of blade				3
<b>10. Leaf blade: twisting</b>					
[9.]	absent or very weakly expressed				1
	weakly expressed				2
	strongly expressed				3
<b>11. Leaf blade: blistering</b>					
[10.]	absent or very weakly expressed				1
	weakly expressed				2
	strongly expressed				3

English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
<b>12. Leaf blade: intensity of green color</b>					
[11.] light					3
medium					5
dark					7
<b>13. Leaf blade: pubescence on lower side</b>					
[12.] absent or very weakly expressed					1
weakly expressed					2
strongly expressed					3
<b>14. Leaf blade: firmness</b>					
[13.] soft					3
medium					5
firm					7
<b>15. Leaf blade: undulation of margin</b>					
[14.] absent or very weakly expressed					1
weakly expressed					2
strongly expressed					3

English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
<b>16. Leaf blade: incisions of margin</b>					
[15.]	absent or very shallow				1
	shallow				2
	deep				3
<b>TWF: To consider whether we should rather say: entire (1), sinuate (2), crenate (3), dentate (4).</b>					
<b>17. Leaf blade: shape of apex</b>					
(+)					
[16.]	acuminate				1
	acute				2
	obtuse				3
	rounded				4
<b>18. Leaf blade: emargination at tip</b>					
(+)					
[17.]	absent or very shallow				1
	shallow				2
	deep				3
<b>19. Petiole: length</b>					
[18.]	short				3
	medium				5
	long				7
<b>20. Petiole: presence of wings</b>					
[19.]	absent				1
	present				9

English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
<b>21. Petiole: width of wings</b>					
[19a.] narrow					3
medium					5
broad					7
<b>22. Flower bud: presence of anthocyanin coloration</b>					
[21.] absent					1
present					9
<b>23. Flower bud: intensity of anthocyanin coloration</b>					
[21a.] weak					3
medium					5
strong					7
<b>24. Flower: diameter of calyx</b>					
[23.] small					3
medium					5
large					7
<b>25. Flower: length of petal</b>					
[24.] short					3
medium					5
long					7

English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
<b>26. Flower: width of petal</b>					
[25.] narrow					3
medium					5
broad					7
<b>27. Flower: ratio length/width of petal</b>					
<b>new</b> small					3
medium					5
large					7
<b>28. Flower: length of stamens</b>					
[27.] short					3
medium					5
long					7
<b>28a. Flower: color of stem of stamens</b>					
white				Carrizo	
pink				Forner Alcaide 13	
<b>29. Anther: color</b>					
[28.] white					1
light yellow					2
medium yellow					3

English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
<b>30. Anther: viable (* pollen)</b>					
[29.]	absent				1
	present				9
<b>31a Ovary: pubescence new</b>					
	absent				1
	present			<i>Poncirus trifoliata</i>	9
<b>31. Style: length</b>					
[31.]	short				3
	medium				5
	long				7
<b>33. Fruit: length (* )</b>					
[34.]	short				3
	medium				5
	long				7
<b>34. Fruit: diameter (* )</b>					
[35.]	small				3
	medium				5
	large				7

English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
<b>35. Fruit: ratio (* length/diameter)</b>					
[36.] small					3
medium					5
large					7
<b>36. Fruit: position of (* broadest part)</b>					
[37.] towards stalk end					1
at middle					2
towards distal part					3
<b>37a. Fruit: circumference (+ in transversal section)</b>					
[38.] round				<i>Poncirus trifoliata</i>	1
somewhat angular					2
scalloped					3
<b>37b. Fruit: circumference in longitudinal section</b>					
[39.] flattened					1
slightly rounded					2
strongly rounded					3
tapered					4
<b>38. Fruit: general shape (* of proximal part (+ (excluding neck, collar and depression at stalk end)</b>					
[39.] flattened					1
slightly rounded					2
strongly rounded					3
tapered					4

English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
<b>39. Fruit: presence of depression at stalk end</b>					
(*)					
(+)					
[40.]	absent				1
	present				9
<b>40. Fruit: depth of depression at stalk end</b>					
[41.]	shallow				3
	medium				5
	deep				7
<b>41. Fruit: presence of neck</b>					
(*)					
(+)					
[42.]	absent				1
	present				9
<b>42. Fruit: length of neck</b>					
[43.]	short				3
	medium				5
	long				7
<b>43. Fruit: thickness of neck</b>					
[44.]	thin				3
Changed	medium				5
	thick				7



English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
<b>44. Fruit: presence of constriction at stalk end</b>					
(+)					
[45.]	absent				1
	present				9
<b>45. Fruit: expression of constriction at stalk end</b>					
[45a.]	weak				3
	medium				5
	strong				7
<b>46. Fruit: number of radial grooves at stalk end</b>					
[45b.]	absent or very few				1
	few				2
	many				3
<b>47. Fruit: length of radial grooves at stalk end</b>					
[45c.]	short				3
	medium				5
	long				7

English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
<b>48. Fruit: local depression at stalk attachment (necked varieties only)</b>					
[46.]	absent or very shallow				1
	shallow				2
	deep				3
<b>49. Fruit: presence of collar</b>					
	absent				1
[46a.]	present				9
<b>52. Fruit: abscission layer between floral disc and fruit</b>					
[49.]	absent or very weakly developed				1
	weakly developed				2
	strongly developed				3
<b>53. Fruit: general shape of distal part (excluding nipple, bulging of navel and depression at distal end)</b>					
[50.]	flattened				1
	slightly rounded				2
	strongly rounded				3

English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
<hr/>					
<b>54. Fruit: presence of (* (+) depression at distal end</b>					
[51.] absent					1
present					9
<hr/>					
<b>55. Fruit: depth of depression at distal end</b>					
[52.] shallow					3
medium					5
deep					7
<hr/>					
<b>57. Fruit: presence of (* (+) nipple</b>					
absent					1
[54.] present					9
<hr/>					
<b>58. Fruit: prominence of nipple</b>					
[55.] weak					3
medium					5
strong					7
<hr/>					
<b>59. Fruit: presence of (* (+) areola</b>					
[56.] absent					1
present					9
<hr/>					
<b>60. Fruit: type of areola (+)</b>					
[57.] smooth					1
grooved					2
ridged					3
<hr/>					

English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
<b>61. Fruit: conspicuousness of areola</b>					
[58.] weak					1
medium					2
strong					3
<b>62. Fruit: development of areola</b>					
[59.] not complete					1
complete					2
<b>63. Fruit: diameter of areola</b>					
[60.] small					3
medium					5
large					7
<b>64. Fruit: diameter of stylar scar</b>					
[61.] small					3
medium					5
large					7
<b>65. Fruit: protruding stylar point</b>					
small					3
medium					5
large					7
<b>66. Fruit: persistence of style</b>					
[63.] none					1
partial					2
total					3

English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
<b>69. Fruit: bulging of navel</b>					
[66.]	absent or very weakly expressed				1
	weakly expressed				2
	strongly expressed				3
<b>70. Fruit: presence of radial grooves at distal end</b>					
	absent				1
	present				9
<b>72. Fruit surface: (*) predominant color</b>					
[69.]	green				1
	yellow green				2
	light yellow				3
	medium yellow				4
	green and yellow				5
	yellow orange				6
	medium orange				7
	dark orange				8
	orange red				9
	green and orange				10
	yellow and orange				11
	yellow and red				12
	orange and red				13

English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
<b>73. Fruit surface: presence of pubescence</b>					
[69a.] absent					1
present				<i>Poncirus trifoliata</i>	9
<b>74. Fruit surface: intensity of pubescence</b>					
[69b.] weak					3
medium					5
strong					7
<b>76. Fruit surface: roughness</b>					
[71.] smooth					3
medium					5
rough					7
<b>77. Fruit surface: evenness of size of oil glands</b>					
[72.] all more or less the same size					1
larger ones interspersed by smaller ones					2
<b>78. Fruit surface: size of larger oil glands</b>					
[73.] small					3
medium					5
large					7

English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
<b>79. Fruit surface: conspicuousness of larger oil glands</b>					
[74.] weak					3
medium					5
strong					7
<b>80. Fruit surface: presence of pitting and pebbling on oil glands</b>					
[75.] pitting and pebbling absent					1
pitting absent, pebbling present					2
pitting present, pebbling absent					3
pitting and pebbling present					4
<b>81. Fruit surface: density of pitting on oil glands</b>					
[76.] sparse					3
medium					5
dense					7
<b>82. Fruit surface: depth of pitting on oil glands</b>					
[77.] shallow					3
medium					5
deep					7

English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
<b>83. Fruit surface: density of pebbling on oil glands</b>					
[77a.] sparse					3
medium					5
dense					7
<b>84. Fruit surface: degree of pebbling on oil glands</b>					
[78.] weak					3
medium					5
strong					7
<b>85. Fruit rind: thickness (* )</b>					
[80.] thin					3
medium					5
thick					7
<b>86. Fruit rind: (* ) adherence to flesh</b>					
[82.] weak					3
medium					5
strong					7
<b>87. Fruit rind: strength</b>					
[83.] weak					3
medium					5
strong					7



English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
<b>89. Fruit rind:</b>					
<small>Changed</small> <b>conspicuousness of oil glands on inner surface</b>					
[85.]	absent or very weakly conspicuous				1
	weakly conspicuous				2
	strongly conspicuous				3
<b>90. Fruit: color of albedo</b>					
[86.]	greenish				1
	white				2
	light yellow				3
	light orange				4
	pinkish				5
	reddish				6
<b>91. Fruit: density of albedo</b>					
[87.]	loose				3
	medium				5
	dense				7
<b>92. Fruit: amount of albedo adhering to flesh (strands excluded)</b>					
[88.]	absent or very small				1
	small				3
	medium				5
	large				7
	very large				9

English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
<b>93. Fruit: presence of albedo strands</b>					
[89.] absent					1
present					9
<b>94. Fruit: amount of albedo strands</b>					
[89a.] small					3
medium					5
large					7
<b>97. Fruit: main color of flesh (*)</b>					
[92.] whitish					1
light green					2
light yellow					3
medium yellow					4
light orange					5
medium orange					6
dark orange					7
red					13?
yellow and red					14?
purple					15?

**TWF 1999: To decide whether to include colorless**

English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
<b>98. Fruit: filling of core</b>					
[93.]	absent or very sparse				1
	sparse				3
	medium				5
	dense				7
	<i>very dense?</i>				9?
<b>101. Fruit: number of well developed segments</b>					
[96.]	few				3
	medium				5
	many				7
<b>102. Fruit: coherence of adjacent segment walls</b>					
[98.]	weak				3
	medium				5
	strong				7
<b>103. Fruit: strength of segment walls</b>					
[99.]	weak				3
	medium				5
	strong				7
<b>108. Fruit: presence of navel viewed internally</b>					
[103.]	absent or very rare				1
	occasionally present				2
	always present				3

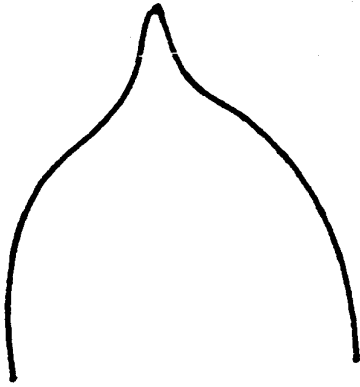
English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
<b>110. Fruit: juice content</b>					
[106.] low					3
medium					5
high					7
<b>114. Fruit: number of seeds</b>					
[110.] absent ( <i>absent or very few ?</i> )					1
few					3
medium					5
many					7
very many					9
<b>115. Seed: polyembryony (*)</b>					
[111.] absent					1
present					9
<b>116. Seed: length</b>					
[113.] short					3
medium					5
long					7
<b>117. Seed: width</b>					
[114.] narrow					3
medium					5
broad					7
<b>118. Seed: surface (when fresh)</b>					
[115.] smooth					1
veined					2
wrinkled					3

English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
<b>120. Seed: external color when fresh (<del>when fresh</del> ?)</b>					
[117.] greenish					1
whitish					2
yellowish					3
pinkish					4
brownish					5
<b>121. Seed: color of inner seed coat (as for 118)</b>					
[118.] white					1
light yellow					2
light brown					3
brown					4
dark brown					5
red					6
purple					7
<b>122. Seed: color of cotyledons (as for 118, polyembryonic varieties only)</b>					
[119.] white					1
cream					2
light green					3
dark green					4
<b>124. Flowering habit (*)</b>					
[121.] flowering once					1
flowering more than once					2

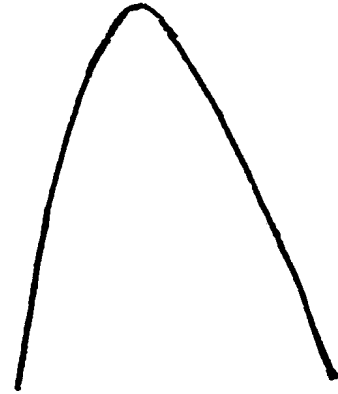
English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
<b>125. Time of maturity</b>					
<b>(*) (of fruit for consumption ?)</b>					
[122.]	early				3
	medium				5
	late				7
<b>127. Plant: self-incompatibility</b>					
<b>new</b>	absent				1
	present				9

VIII. Explanations on the Table of Characteristics

Ad. 17: Leaf blade: shape of apex (as for 6)



1  
acuminate



2  
acute



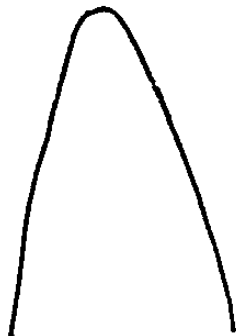
3  
obtuse



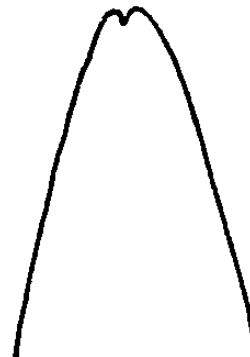
4  
rounded

Ad. 18: Leaf blade: emargination at tip

**Must this drawing be changed to fit the new states?**

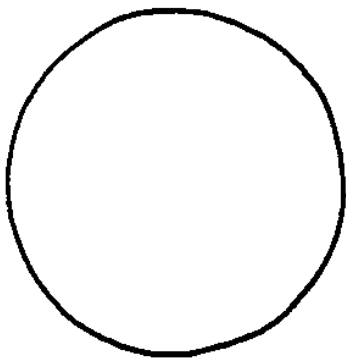


1  
absent

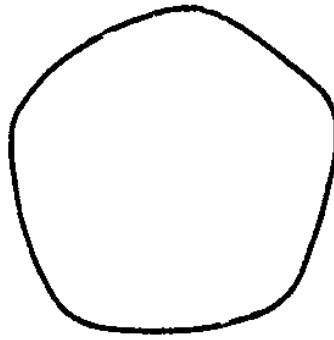


9  
present

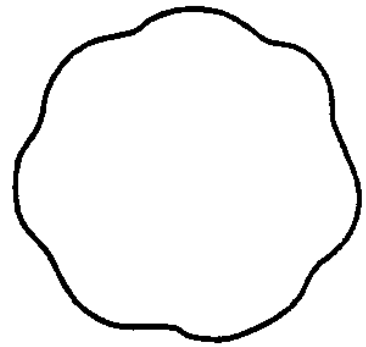
Ad. 37a: Fruit: circumference in transversal section



1  
round



2  
somewhat angular



3  
scalloped

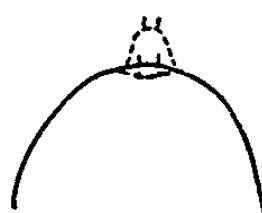
Ad. 38: Fruit: general shape of proximal part (excluding neck, collar and depression at stalk end)



1  
flattened



2  
slightly rounded



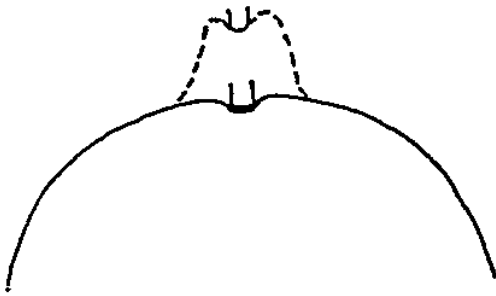
3  
strongly rounded



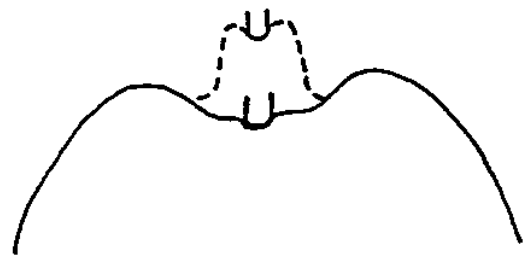
4  
tapered



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

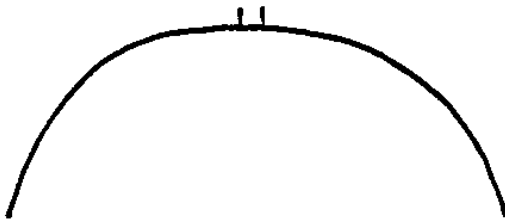


1  
absent

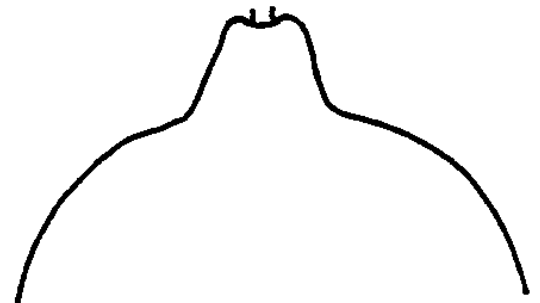


9  
present

Ad. 41: Fruit: presence of neck

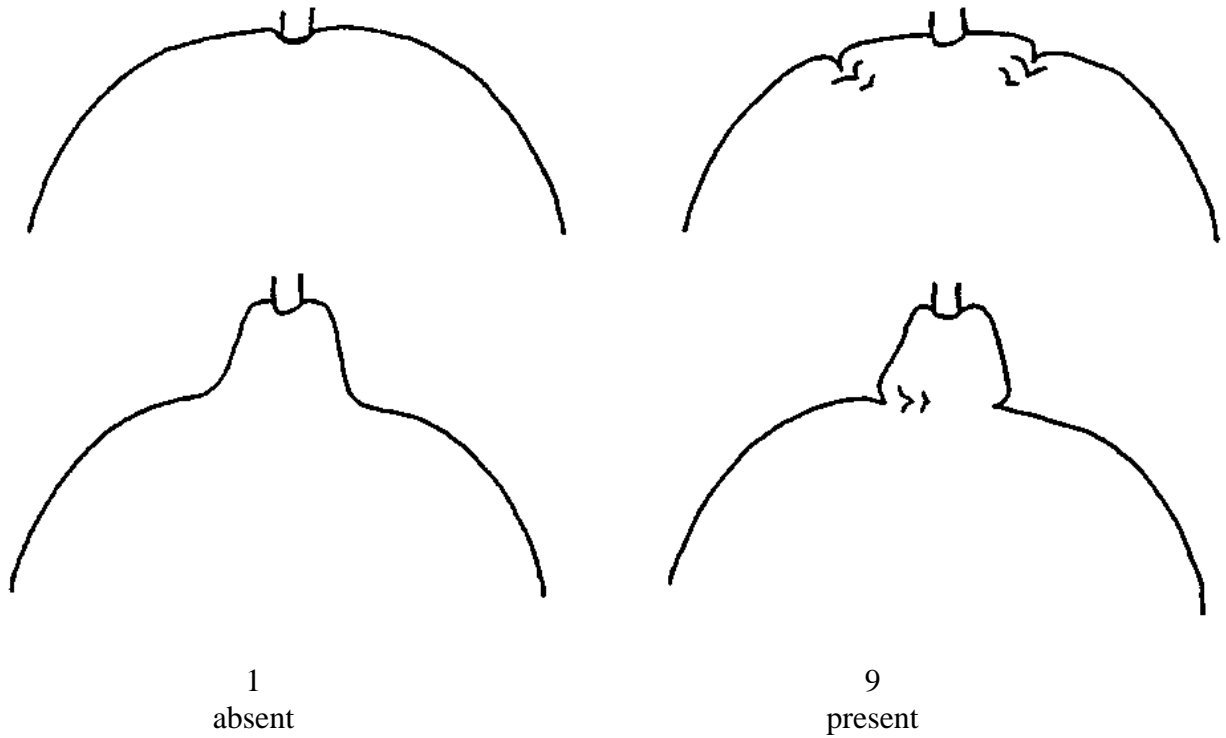


1  
absent



9  
present

Ad. 44: Fruit: presence of constriction at stalk end



Ad. 48: Fruit: local depression at stalk attachment (necked varieties only)

**[drawings still missing]**

1  
absent or very shallow

2  
shallow

3  
deep

Ad. 49: Fruit: presence of collar

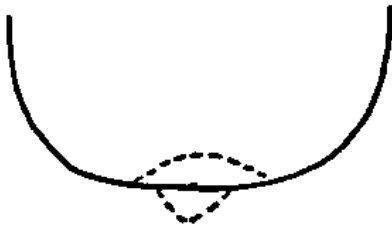


1  
absent



9  
present

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



1  
flattened

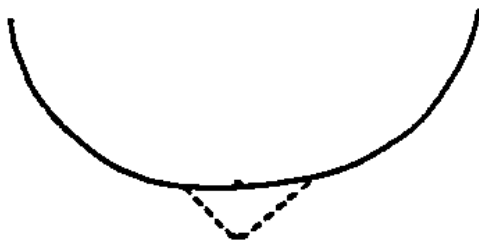


2  
slightly rounded



3  
strongly rounded

Ad. 54: Fruit: presence of depression at distal end



1  
absent

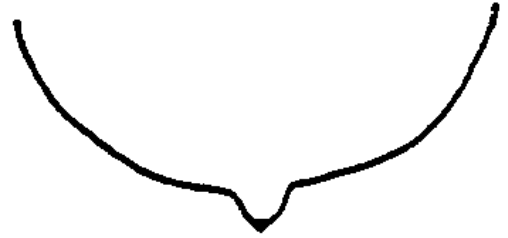


9  
present

Ad. 57: Fruit: presence of nipple



1  
absent



9  
present

Ad. 60: Fruit: type of areola



1  
smooth



2  
grooved



3  
ridged

List of Example Varieties for Poncirus and Its Hybrids – Group 5

<b>Variety denomination</b>	<b>Group or species</b>	<b>Observations</b>
CPB 4475	CML	
CARRIZO	CTG	
CUNNINGHAM	CTG	
FORNER ALCAIDE 13	CTI	
PONCIRUS TRIFOLIATA	PON	

List of Groups of Citrus Varieties

GROUP

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 trifoliata* (L.) Raf. (Trifoliata 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

IX. Literature

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Saunt, J. 1990: "Citrus varieties of the world: an illustrated guide," Sinclair International Ltd., Norwich, England, 126 pp.

Shannon, L.M., Frolich, E.F., Cameron, S.H., 1960: Characteristics of *Poncirus trifoliata* selections. Am. Soc, Hort. Sci, 76: 163-169.

Webber, H. J. and L. D. Batchelor (Editors), 1946: "The Citrus Industry", Volume I. University of California Press. 1028 pp.

X. Technical Questionnaire

	Reference Number (not to be filled in by the applicant)
<b>TECHNICAL QUESTIONNAIRE</b> to be completed in connection with an application for plant breeders' rights	
<p>1. <u>GROUP</u></p> <p>TRIFOLIATE ORANGES AND THEIR HYBRIDS</p> <p>PON: <i>Poncirus trifoliata</i> (L.) Raf. (Trifoliata Oranges) [ ]</p> <p><b>CTG: Poncirus x Sweet Orange (Citranges)</b> [ ]</p> <p><b>CML: Poncirus x Grapefruit (Citrumelos)</b> [ ]</p> <p><b>CTL: Poncirus x Lemons (Citremons)</b> [ ]</p> <p><b>CTI: Poncirus x Mandarin (Citrandarins)</b> [ ]</p> <p><b>OPH: Other Poncirus Hybrids</b> [ ]</p>	
2. Applicant (Name and address)	
3. Proposed denomination or breeder's reference	
<p>4. Information on origin, maintenance and reproduction of the variety</p> <p>4.1 Origin</p> <p>(a) Seedling of unknown parentage [ ]</p> <p>(b) Produced by controlled pollination [ ] (indicate parent varieties)</p>	



– 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) [ ]  
.....

(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:

.....

4.4 Virus status

- (a) The variety is free of the following viruses:  [ ]  
(indicate 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
<b>5.1 Leaf: caducity</b> <b>(5a)</b>		
perennial	CPB 4475	1[ ]
partially caducous	Troyer	2[ ]
caducous	<i>Poncirus trifoliata</i>	3[ ]
<b>5.2 Adult leaf: number of leaflets</b> <b>(5b)</b>		
one only		1[ ]
variable	Troyer	2[ ]
three	<i>Poncirus trifoliata</i>	3[ ]
<b>5.3 Fruit surface: presence of pubescence</b> <b>(73)</b>		
absent		1[ ]
present	<i>Poncirus trifoliata</i>	9[ ]
<b>5.4 Fruit: number of seeds</b> <b>(114)</b>		
absent ( <i>absent or very few ?</i> )		1[ ]
few		3[ ]
medium		5[ ]
many		7[ ]
very many		9[ ]
<b>5.5 Seed: polyembryony</b> <b>(115)</b>		
absent		1[ ]
present		9[ ]

6. Similar varieties and differences from these varieties			
Denomination of similar variety	Characteristic in which the similar variety is different <sup>o)</sup>	State of expression of similar variety	State of expression of candidate variety
<hr/> <sup>o)</sup> In the case of identical states of expressions of both varieties, please indicate the size of the difference.			
7. Additional information which may help to distinguish the variety			
7.1 Resistance to pests and diseases			
7.2 Special conditions for the examination of the variety			
7.3 Other information			
A representative color photo of the variety should be included in 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 that question is yes, please attach a copy of such an authorization.			