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**INTERNATIONAL UNION
FOR THE PROTECTION
OF NEW VARIETIES OF
PLANTS**

**UNION INTERNATIONALE
POUR LA PROTECTION
DES OBTENTIONS
VÉGÉTALES**

**INTERNATIONALER
VERBAND ZUM SCHUTZ
VON PFLANZEN-
ZÜCHTUNGEN**

**UNIÓN INTERNACIONAL
PARA LA PROTECCIÓN
DE LAS OBTENCIONES
VEGETALES**

DRAFT

**GUIDELINES
FOR THE CONDUCT OF TESTS
FOR DISTINCTNESS, UNIFORMITY AND STABILITY**

ACTINIDIA
(*Actinidia* Lindl.)

These Guidelines should be read in conjunction with document TG/1/2, which contains explanatory notes on the general principles on which the Guidelines have been established.

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I. Subject of these Guidelines

These Test Guidelines have primarily been prepared for vegetatively propagated varieties of kiwifruit, but they may be applied to all vegetatively propagated female, male and hermaphroditic varieties of the genus *Actinidia* Lindl. of the family Actinidiaceae.

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 quarantine and customs formalities are complied with. As a minimum, the following quantity of plant material is recommended:

8 plants on their own roots or 8 plants on a clonal rootstock.
The competent authorities to select the most appropriate rootstock.

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 test material is grafted onto a clonal rootstock, there should be information available stating how the rootstock may affect the expression of characteristics. In the case of a female variety the applicant should send in or at least indicate one male variety which flowers at the same time and is compatible with the female variety under test. The male variety should preferably be of the same taxon and at the same ploidy level as the female variety.

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 of female and fruiting hermaphrodite varieties it is essential that the plants under test bear a satisfactory crop of fruit for at least two growing periods. To assess distinctness of fruit size and fruit shape it is important to ensure adequate seed set, either by hand pollination or by providing sufficient pollinators.

2. To assess distinctness of male and non-fruiting varieties it is essential that the plants under test produce two full flowerings over at least two growing periods. If it is claimed that a variety is hermaphroditic, tests should be carried out to determine whether it is self-fertile and self-setting. Pollen viability should be tested separately in addition to flowers being bagged to prevent pollination by outside pollen. Hand pollination is recommended.

3. The testing 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.

4. The tests should be carried out under conditions ensuring normal growth. As a minimum, each test should include all 8 plants. Separate plots for observation and for measuring can only be used if they have been subject to similar environmental conditions.
5. Additional tests for special purposes may be established.

IV. Methods and Observations

1. Unless otherwise stated, all observations should be made on 8 plants or two parts from each of 8 plants.
2. For the assessment of uniformity and stability, a population standard of 1% and an acceptance probability of at least 95% should be applied for varieties resulting from a crossing and a population standard of 2% with the same acceptance probability for mutations. For a sample size of 8 plants, the maximum number of off-types allowed in both cases would be 1.
3. The shape, size and hairiness of leaves can vary greatly according to the type and vigor of the shoot on which they are borne. Unless specified, the shoots should be replacement canes, i.e., those that will be tied down and retained for the following season's flowering.
4. Unless otherwise stated, all observations on the young shoot should be made during active vegetative growth, on internodes 10 to 20 cm from the tip of growing shoots.
5. All observations on the stem (including observations on the over-wintering buds and bud support) should be made in the middle third of the replacement stem after leaf fall.
6. All observations on the leaf should be made near the middle of the current season's growth on sufficiently mature, but not old leaves. The most basal leaves of a shoot should be excluded since they do not usually attain full size or typical shape.
7. All observations on the presence or absence of anthocyanin coloration in vegetative organs refer to the general appearance of the organ, irrespective of whether red pigments are present in hairs or in the underlying skin.
8. All observations on the flower should be made on recently fully-opened terminal (king) flowers.
9. Unless otherwise stated, all observations on the fruit should be made on fruits at harvest maturity.
10. Internal fruit characteristics should be observed at maturity for consumption.
11. Because daylight varies, color determinations made against a color chart should be made either in a suitable cabinet providing artificial daylight or in the middle of the day in a room without direct sunlight. The spectral distribution of the illuminant for artificial daylight should conform with the CIE Standard of Preferred Daylight D 6500 and should fall within the tolerance set out in the British Standard 950, Part I. These determinations should be made with the plant part placed against a white background.

V. Grouping of Varieties

1. The collection of varieties to be grown should be divided into groups to facilitate the assessment of distinctness. 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.
2. It is recommended that the competent authorities use the following characteristics for grouping varieties.

For male varieties:

- (a) Petal: type of coloration (adaxial side) (characteristic 52)
- (b) Time of beginning of flowering (characteristic 91)

For female and hermaphrodite varieties:

- (a) Fruit: size (characteristic 63)
- (b) Fruit: general shape (characteristic 64)
- (c) Fruit: hairiness of skin (characteristic 74)
- (d) Fruit: color of outer pericarp (characteristic 82)
- (e) Time of maturity for harvest (characteristic 92)

VI. Characteristics and Symbols

1. To assess distinctness, uniformity and stability, the characteristics and their states, as given in the Table of Characteristics, should be used.
2. Notes (numbers), for the purpose of electronic data processing, are given opposite the states of expression for each characteristic.
3. 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.

VIII. Explanations on the Table of Characteristics

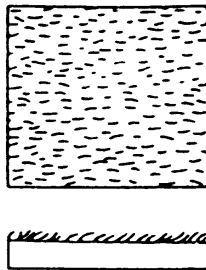
Ad. 3: Plant: ploidy

Ploidy is determined by counting chromosomes or by flow cytometry. The basic chromosome number $n = 29$.

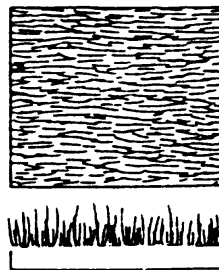
Ad. 7: Young shoot: type of hairiness

Ad. 14: Stem: type of hairiness

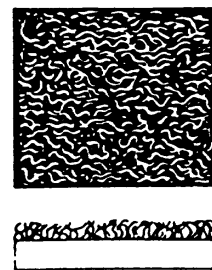
Ad. 76: Fruit: type of hairiness



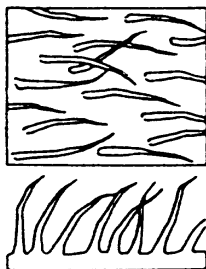
1
downy



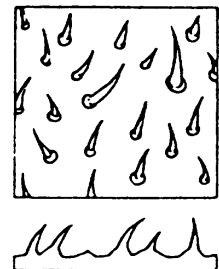
2
velutinous



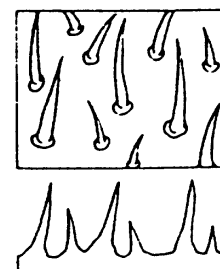
3
tomentose



4
hirsute

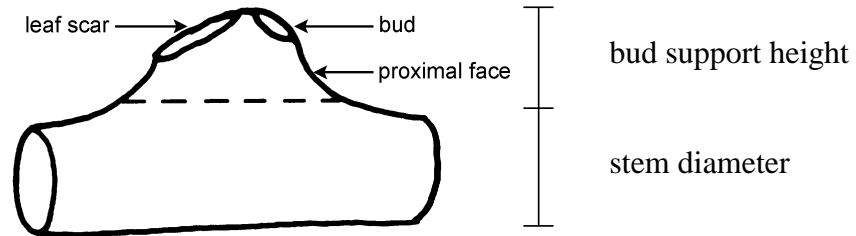


5
bristly



6
hispid

Ad. 18, 19 and 23: Stem: proximal face of bud support (18), size of bud support (19), leaf scar (23)



Ad. 21: Stem: presence of bud cover



1
absent



2
present

Ad. 22: Stem: size of hole in bud cover



3
small



5
medium



7
large

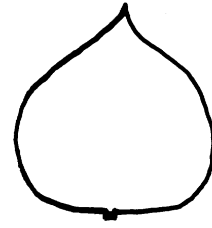
Ad. 26: Leaf blade: shape



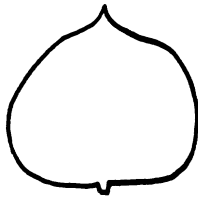
1
lanceolate



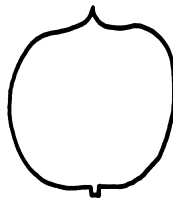
2
ovate



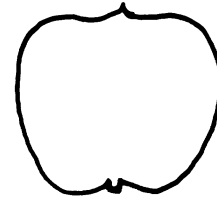
3
broad ovate



4
very broad ovate

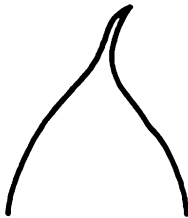


5
broad obovate

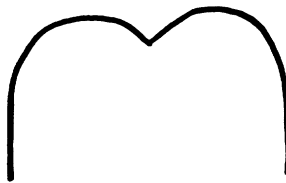


6
very broad obovate

Ad. 27: Leaf blade: shape of apex



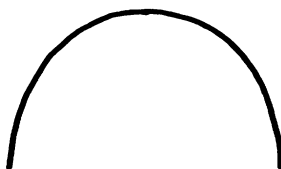
1
caudate



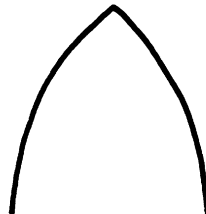
2
emarginate



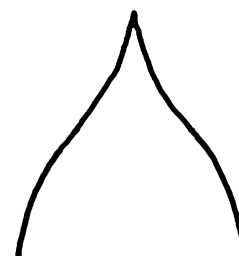
3
retuse



4
rounded

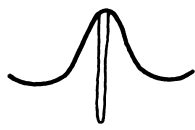


5
acute

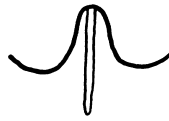


6
acuminate

Ad. 28: Leaf blade: arrangement of basal lobes



1
far apart



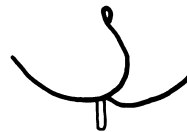
2
slightly apart



3
touching each other



4
slightly overlapping

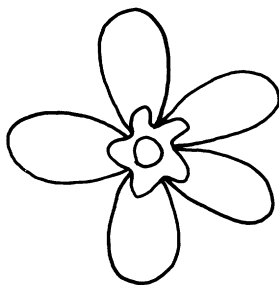


5
strongly overlapping

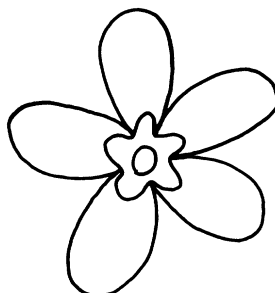
Ad. 42: Flower stalk: length

For a solitary flower, the length of the flower stalk is the length of the pedicel.
For an inflorescence, the length of the flower stalk is the length of the peduncle plus the length of the longest pedicel.

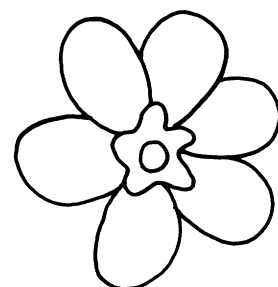
Ad. 50: Flower: arrangement of petals (viewed from beneath)



1
apart

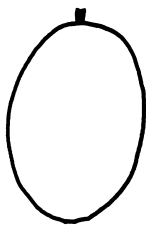


2
touching

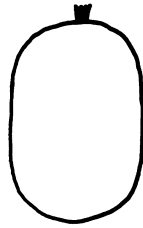


3
overlapping

Ad. 64: Fruit: general shape



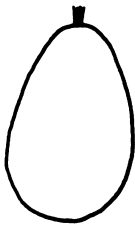
1
ellipsoid



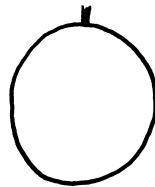
2
oblong



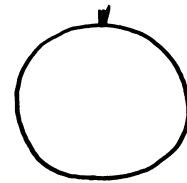
3
ovoid



4
obovoid

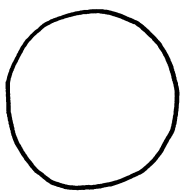


5
spheroid

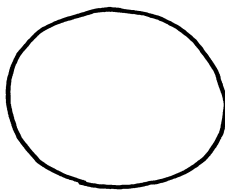


6
obloid

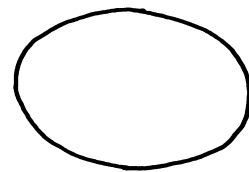
Ad. 65 and 85: Fruit: shape in cross section (at median) (65), general shape of core (in cross section) (85)



1
circular



2
oblate



3
transverse elliptic

Ad. 66: Fruit: general shape of stylar end



1
deeply depressed



2
slightly depressed



3
flat



4
rounded



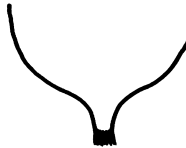
5
slightly blunt protruding



6
strongly blunt protruding

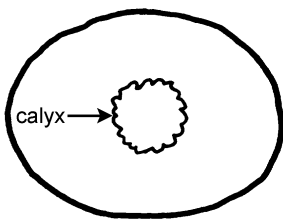


7
slightly pointed protruding

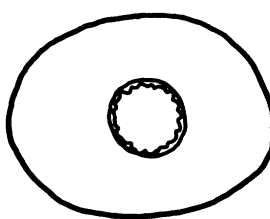


8
strongly pointed protruding

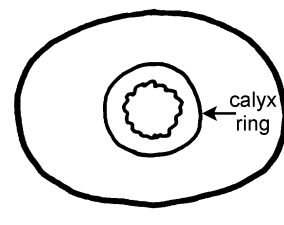
Ad. 67: Fruit: presence of calyx ring



1
absent or very weakly expressed

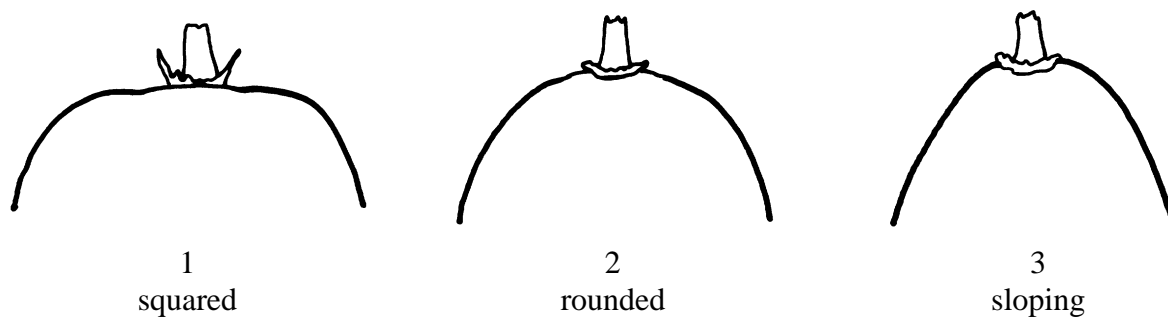


2
weakly expressed

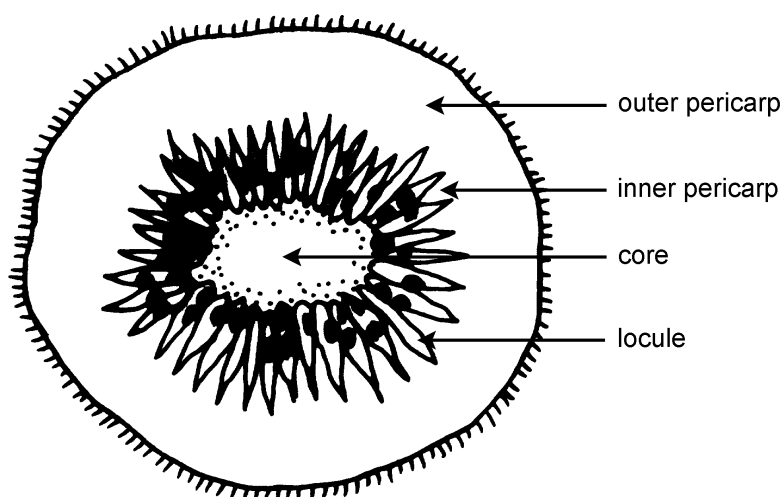


3
strongly expressed

Ad. 68: Fruit: shape of shoulder at stalk end



Ad. 82, 83, 84 and 87: Fruit: color of outer pericarp (82), color of inner pericarp (locules) (83), diameter of core relative to fruit (84) and color of core (87)



Ad. 88: Fruit: sweetness

The total soluble solids content (TSS) is measured.

Ad. 89: Fruit: acidity

Titrateable acids are determined by titration.

IX. Literature

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X. Technical Questionnaire

		Reference Number (not to be filled in by the applicant)
<p>TECHNICAL QUESTIONNAIRE to be completed in connection with an application for plant breeders' rights</p>		
1.1	Genus	<i>Actinidia</i> Lindl. ACTINIDIA
1.2	Species (indicate species)
2.	Applicant (Name and address)	
3.	Proposed denomination or breeder's reference	

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)

..... []

(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 (for female and fruit setting hermaphroditic varieties only)

Male pollenizers suitable for the candidate variety are the following varieties:

.....

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
<u>For male varieties</u>		
5.1 Petal: type of coloration (adaxial side) (52)		
single-colored		1[]
bicolored	Meteor	2[]
5.2 Time of beginning of flowering (91)		
early	Hort16A	3[]
medium	Abbott	5[]
late	Hayward	7[]
<u>For female and hermaphrodite varieties</u>		
5.3 Fruit: size (63)		
small		3[]
medium	Tomua	5[]
large	Hayward	7[]
very large	Jade Moon	9[]
5.4 Fruit: general shape (64)		
ellipsoid	Hayward	1[]
oblong	Bruno	2[]
ovoid	Hort16A	3[]
obovoid	Monty	4[]
spheroid		5[]
obloid	Kuimi	6[]

Characteristics	Example Varieties	Note
5.5 Fruit: hairiness of skin (74)		
absent		1[]
present		9[]
5.6 Fruit: color of outer pericarp (82)		
light green		1[]
medium green	Hayward	2[]
dark green		3[]
greenish yellow		4[]
medium yellow	Hort16A	5[]
dark yellow		6[]
yellowish orange		7[]
orange		8[]
red		9[]
red purple		10[]
5.7 Time of maturity for harvest (92)		
early		3[]
medium	Tomua	5[]
late	Hayward	7[]

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
---------------------------------	--	--	--

^{o)} 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 added to 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.

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