



EUROPEAN UNION

COMMUNITY PLANT VARIETY OFFICE

PROTOCOL FOR DISTINCTNESS, UNIFORMITY AND STABILITY TESTS

Solanum melongena L.

EGG PLANT

UPOV Code: SOLAN_MEL

Adopted on 13/03/2008

I - SUBJECT OF THE PROTOCOL

The protocol describes the technical procedures to be followed in order to meet the Council Regulation 2100/94 on Community Plant Variety Rights. The technical procedures have been agreed by the Administrative Council and are based on general UPOV Document TG/1/3 and UPOV Guideline TG/117/4 dated 17/04/2002 for the conduct of tests for Distinctness, Uniformity and Stability. This protocol applies to varieties of *Solanum melongena* L.

II - SUBMISSION OF SEED AND OTHER PLANT MATERIAL

1. The Community Plant Variety Office (CPVO) is responsible for informing the applicant of
 - the closing date for the receipt of plant material;
 - the minimum amount and quality of plant material required;
 - the examination office to which material is to be sent.

A sub-sample of the material submitted for test will be held in the variety collection as the definitive sample of the candidate variety.

The applicant is responsible for ensuring compliance with any customs and plant health requirements.

2. Final dates for receipt of documentation and material by the Examination Office

The final dates for receipt of requests, technical questionnaires and the final date or submission period for plant material will be decided by the CPVO and each Examination Office chosen.

The Examination Office is responsible for immediately acknowledging the receipt of requests for testing, and technical questionnaires. Immediately after the closing date for the receipt of plant material the Examination Office should inform the CPVO whether acceptable plant material has been received or not. However if unsatisfactory plant material is submitted the CPVO should be informed as soon as possible.

3. Plant material requirements

The current quality and quantity requirements as well as the final dates for submission of the plant material are available on the CPVO website (www.cpvo.europa.eu) and are published in the CPVO gazette 'S2'.

Quality of seed: Should not be less than the standards laid down for certified seed in Annex II of Council Directive 2002/55/EC.

Seed Treatment: The plant material must not have undergone any treatment unless the CPVO and the Examination Office allow or request such treatment. If it has been treated, full details of the treatment must be given.

Special requirements: -

Labelling of sample: - Species
- File number of the application allocated by the CPVO
- Breeder's reference
- Examination reference (if known)
- Name of applicant
- The phrase "On request of the CPVO"

III - CONDUCT OF TESTS

1. Variety collection

A variety collection will be maintained for the purpose of establishing distinctness of the candidate varieties in test. A variety collection may contain both living material and descriptive information. A variety will be included in a reference collection only if plant material is available to make a technical examination.

Pursuant to Article 7 of Council Regulation No. 2100/94, the basis for a collection should be the following:

- varieties listed or protected at the EU level or at least in one of the EEA Member States;
- varieties protected in other UPOV Member States;
- any other variety in common knowledge.

The composition of the variety collection in each Examination Office depends on the environmental conditions in which the Examination Office is located.

Variety collections will be held under conditions which ensure the long term maintenance of each accession. It is the responsibility of Examination Offices to replace reference material which has deteriorated or become depleted. Replacement material can only be introduced if appropriate tests confirm conformity with the existing reference material. If any difficulties arise for the replacement of reference material Examination Offices must inform the CPVO. If authentic plant material of a variety cannot be supplied to an Examination Office the variety will be removed from the variety collection.

2. Material to be examined

Candidate varieties will be directly compared with other candidates for Community plant variety rights tested at the same Examination Office, and with appropriate varieties in the variety collection. When necessary an Examination Office may also include other candidates and varieties. Examination Offices should therefore make efforts should be made to co-ordinate the work with other offices involved in DUS-testing of eggplant. There should be at least an exchange of technical questionnaires for each candidate variety, and during the test period, Examination Offices should notify each other and the CPVO of candidate varieties which are likely to present problems in establishing distinctness. In order to solve particular problems Examination Offices may exchange plant material.

3. Characteristics to be used

The characteristics to be used in DUS tests and preparation of descriptions shall be those referred to in Annex 1. All the characteristics shall be used, providing that observation of a characteristic is not rendered impossible by the expression of any other characteristic, or the expression of a characteristic is prevented by the environmental conditions under which the test is conducted. In the latter case, the CPVO should be informed. In addition the existence of some other regulation e.g. plant health, may make the observation of the characteristic impossible.

The Administrative Council empowers the President, in accordance with Article 23 of Commission Regulation N° 1239/95, to insert additional characteristics and their expressions in respect of a variety.

4. Grouping of varieties

The varieties and candidates to be compared will 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 and which in their various states of expression are fairly evenly distributed throughout the collection. In the case of continuous grouping characteristics overlapping states of expression between adjacent groups is required to reduce the risks of incorrect allocation of candidates to groups. The characters used for grouping are the following (the numbers in brackets refer to the CPVO numbering):

- a) Fruit: length (characteristic 16)
- b) Fruit: ratio length/maximum diameter (characteristic 18)
- c) Fruit: general shape (characteristic 19)
- d) Fruit: main colour of skin at harvest maturity (characteristic 24)
- e) Fruit: stripes (characteristic 28)
- f) Fruit: colour of flesh (characteristic 40)

5. Trial designs and growing conditions

The minimum duration of tests will normally be two independent growing cycles. For vegetatively propagated varieties, the duration of the testing may be reduced to one growing cycle if the results on distinctness and uniformity are conclusive. Tests will be carried out under conditions ensuring normal growth. The size of the plots will be such that plants or parts of plants may be removed for measuring and counting without prejudice to the observations which must be made up to the end of the growing period.

The test design is as follows:

As a minimum, each test should include a total of 20 plants, which should be divided between two or more replicates.

All observations determined by measurement or counting should be made on 10 plants or parts of 10 plants.

6. Special tests

In accordance with Article 83(3) of Council Regulation No. 2100/94 an applicant may claim either in the Technical Questionnaire or during the test that a candidate has a characteristic which would be helpful in establishing distinctness. If such a claim is made and is supported by reliable technical data, a special test may be undertaken providing that a technically acceptable test procedure can be devised.

Special tests will be undertaken, with the agreement of the President of CPVO, where distinctness is unlikely to be shown using the characters listed in the protocol.

7. Standards for decisions

a) **Distinctness**

A candidate variety will be considered to be distinct if it meets the requirements of Article 7 of Council Regulation No. 2100/94.

b) **Uniformity**

For the assessment of uniformity a population standard of 1% with an acceptance probability of at least 95% should be applied.

Table of maximum numbers of off-types allowed for uniformity standards

Number of plants	off-types allowed
6-35	1

c) **Stability**

A candidate will be considered to be sufficiently stable when there is no evidence to indicate that it lacks uniformity.

IV – REPORTING OF RESULTS

After each recording season the results will be summarised and reported to the CPVO in the form of a UPOV model interim report in which any problems will be indicated under the headings distinctness, uniformity and stability. Candidates may meet the DUS standards after two growing periods but in some cases three growing periods may be required. When tests are completed the results will be sent by the Examination Office to the CPVO in the form of a UPOV model final report.

If it is considered that the candidate complies with the DUS standards, the final report will be accompanied by a variety description in the format recommended by UPOV. If not the reasons for failure and a summary of the test results will be included with the final report.

The CPVO must receive interim reports and final reports by the date agreed between the CPVO and the examination office.

Interim reports and final examination reports shall be signed by the responsible member of the staff of the Examination Office and shall expressly acknowledge the exclusive rights of disposal of CPVO.

V - LIAISON WITH THE APPLICANT

If problems arise during the course of the test the CPVO should be informed immediately so that the information can be passed on to the applicant. Subject to prior agreement, the applicant may be directly informed at the same time as the CPVO particularly if a visit to the trial is advisable.

The interim report and final report shall be sent by the Examination Office to the CPVO.

ANNEXES TO FOLLOW

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Legend:

Note: For the CPVO numbered characteristics, all characteristics in the table are compulsory; notwithstanding, in the case of disease resistance characteristics, only those resistances marked with an asterisk (*) in the CPVO column are compulsory. The asterisks in the UPOV numbered characteristics are there for information purposes and denote those characteristics which should always be observed when a UPOV guideline is utilised.

In general for the assessment of resistance characteristics, the facilities of other Examination Offices or specialised institutions might be used, subject to previous arrangements.

Some characteristics may be discarded: if there are already phytosanitary restrictions.

- (+) See explanations on the Table of characteristics
- (a) – (b) See explanations on the table of characteristics
- G Grouping characteristic

Types of expression of characteristics:

- QL – Qualitative characteristic
- QN – Quantitative characteristic
- PQ – Pseudo-qualitative characteristic

Type of observation of characteristics:

- MG – Single measurement of a group of plants or parts of plants
- MS – Measurement of a number of individual plants or parts of plants
- VG – Visual assessment by a single observation of a group of plants or parts of plants
- VS – Visual assessment by observation of individual plants or parts of plants

When a method of observation is attributed to a certain characteristic, the first differentiation is made depending if the action taken is a visual observation (V) or a measurement (M).

The second differentiation deals with the number of observations the expert attributes to each variety, thus the attribution of either G or S.

If a single observation of a group consisting of an undefined number of individual plants is appropriate to assess the expression of a variety, we talk about a visual observation or a measurement made on a group of plants, thus we attribute the letter G (either VG or MG). If the expert makes more than one observation on that group of plants, the decisive part is that we have at the end only one data entry per variety which means that we have to deal with G (e.g. measurement of plant length on a plot – MG, visual observation of green colour of leaves on a plot – VG).

If it is necessary to observe a number of individual plants to assess the expression of a variety, we should attribute the letter S (thus either VS or MS). Single plant data entries are kept per variety for further calculations like the variety mean (e.g. measurement of length of ears – MS, visual observation of growth habit of single plants in grasses – VS). The number of individual plants to be observed in such cases is stated in section III.5.

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ANNEX II

Technical Questionnaire

ANNEX I

TABLE OF CHARACTERISTICS TO BE USED IN DUS-TEST AND PREPARATION OF DESCRIPTIONS

CPVO N°	UPOV N°	Stage, Method	Characteristics	Examples	Note		
1.	1.	VG	Seedling: anthocyanin coloration of hypocotyl				
	(*)		absent	Listada de Gandia	1		
QL			present	Baluroi, Bonica	9		
2.	2.	VG	Seedling: intensity of anthocyanin coloration of hypocotyl				
			very weak	Whitegg	1		
			weak	Bonica	3		
			medium	Baluroi	5		
			strong	Larga Morada	7		
very strong		9					
3.	3.	VG	Plant: growth habit				
			(*)	(a)	erect	Baluroi, Pingtung Long, Purpura Violetta Lunga 2	1
			QN		semi-erect	Bonica, Ovana	3
			horizontal	Black Bell, Irene, Listada de Gandia, Slim Purple	5		
4.	4.	VG	Plant: height				
			QN	(a)	very short		1
					short	Adona, Monstrueuse de NewYork, Whitegg	3
					medium	Short Tom, Tudela	5
					tall	Avan, Baluroi	7
			very tall	Nilo	9		

CPVO N°	UPOV N°	Stage, Method	Characteristics	Examples	Note
5. QN	5.	VG (a)	Stem: distance from cotyledons to the node of the first flower		
			very short	Ova	1
			short	Dourga	3
			medium	Bonica	5
			long	De Barbentane	7
			very long	Nilo	9
6. QL	6. (*)	VG (a)	Stem: anthocyanin coloration		
			absent	Whitegg	1
			present	Baluroi	9
7. QN	7.	VG (a)	Stem: intensity of anthocyanin coloration		
			very weak		1
			weak	Bonica	3
			medium	Baluroi	5
			strong	Redonda de Valencia, Short Tom	7
			very strong		9
8. QN	8.	VG (a)	Stem: pubescence		
			weak	Baluroi, Black Oval	3
			medium	Abrivado, Bonica	5
			strong	Bolan, Estival, Mistral	7
9. QN	9.	VG (a)	Leaf blade: size		
			very small		1
			small	Short Tom	3
			medium	Baluroi	5
			large	Bonica	7
			very large	Morisca	9

CPVO N°	UPOV N°	Stage, Method	Characteristics	Examples	Note
10.	10.	VG	Leaf blade: situation of margin		
(+)		(a)	absent or very weak	Baluroi, Bonica	1
QN			weak	Adria	3
			medium	Epic, Fabiola	5
			strong	Dalia, Niteking, Tosca	7
			very strong		9
11.	11.	VG	Leaf blade: blistering		
QN		(a)	absent or very weak	Baluroi	1
			weak	Ritmo	3
			medium	Bonica	5
			strong	Oria	7
			very strong		9
12.	12.	VG	Leaf blade: intensity of green colour		
QN		(a)	light	Black Beauty	3
			medium	Baluroi, Bonica	5
			dark	Purpura, Short Tom	7
13.	13.	VG	Inflorescence: number of flowers		
PQ	(a)		one to three		1
			more than three	Whitegg	2
14.	14.	VG	Flower: size		
QN	(a)		small	Cima viola	3
			medium	Violetta di new York	5
			large	Prosperosa	7
15.	15.	VG	Flower: intensity of purple colour		
QN	(a)		light	Listada de Gandia	3
			medium	Baluroi	5
			dark	Redonda Negra	7

CPVO N°	UPOV N°	Stage, Method	Characteristics	Examples	Note
16.	16.	VG/MS	Fruit: length		
QN	(*)	(b)	very short	Whitegg	1
			short	Birgah	3
			medium	Cava	5
			long	Mistral	7
G			very long	Indira, Slim Purple	9
17.	17.	VG/MS	Fruit: maximum diameter		
QN		(b)	very small	Slim Purple, Whitegg	1
			small	Mistral, Indira	3
			medium	Cava	5
			large	Bonica	7
			very large	Birgah	9
18.	18.	VG/MS	Fruit: ratio length/maximum diameter		
QN	(*)	(b)	very small	Birgah, Kermit	1
			small	Bonica	3
			medium	Cava	5
			large	Mistral	7
G			very large	Indira, Slim Purple	9
19.	19.	VG	Fruit: general shape		
	(*)	(b)	globular	Kermit, Purpura, Violetta di New York	1
(+)	(+)		ovoid	Beatrice, Whitegg	2
PQ			obovate	Black King, Oria	3
			pear shaped	Listada de Gandia	4
			club shaped	Baluroi, Mileda, Solara	5
			ellipsoid	Volta	6
G			cylindrical	Mirabelle, Slim Purple, Tango	7

CPVO N°	UPOV N°	Stage, Method	Characteristics	Examples	Note
20.	20.	VG	Fruit: size of pistil scar		
QN		(b)	very small	Whitegg	1
			small	Baluroi	3
			medium	Bonica	5
			large	Semi Redonda Negra	7
			very large	Purpura	9
21.	21.	VG	Fruit: apex		
(+)	(+)	(b)	indented		1
PQ			flattened	Prosperosa	2
			rounded	Baluroi	3
			pointed	Short Tom, Slim Purple	4
22.	22.	VG	Fruit: depth of indentation of pistil scar		
QN		(b)	absent or very shallow		1
			shallow		3
			medium		5
			deep		7
			very deep		9
23.	23.	VG	<u>Only for varieties with cylindrical fruits:</u> Fruit: curvature		
QN		(b)	absent or very weak		1
			weak		3
			medium		5
			strong		7
			very strong		9
24.	24.	VG	Fruit: main colour of skin <u>at harvest maturity</u>		
	(*)	(b)	white	Dourga	1
QL			green	Kermit	2
G			violet	Baluroi, Purpura	3

CPVO N°	UPOV N°	Stage, Method	Characteristics	Examples	Note
25.	25.	VG	Only for varieties with green and violet skin colour: Fruit: intensity of main colour of skin (as for 24)		
QN		(b)	very light		1
			light	Bride	3
			medium	Purpura	5
			dark		7
			very dark	Faselis	9
26.	26.	VG	Fruit: glossiness (as for 24)		
QN		(b)	weak	Short Tom	3
			medium	Baluroi	5
			strong	Elisa	7
27.	27.	VG	Fruit: patches		
(+)	(+)	(b)	absent	Baluroi	1
QL			present	Kermit	9
28.	28. (*)	VG	Fruit: stripes		
(+)	(+)	(b)	absent	Baluroi	1
QL G			present	Bandera	9
29.	29.	VG	Fruit: prominence of stripes		
QN		(b)	weak	Bride	3
			medium		5
			strong	Bandera	7
30.	30.	VG	Fruit: density of stripes		
QN		(b)	sparse		3
			medium		5
			dense	Bandera	7

CPVO N°	UPOV N°	Stage, Method	Characteristics	Examples	Note
31. QN	31. (*)	VG (b)	Fruit: ribs		
			absent or very weak	Bonica, Reina Negra	1
			weak	Bibo	3
			medium	Redonda Morada	5
			strong	Black Beauty	7
			very strong		9
32. QN	32.	VG/MS (b)	Fruit: length of peduncle		
			very short	Golden Eggs	1
			short	Globo	3
			medium	Madonna	5
			long	Telar	7
			very long	Adria, Avan	9
33. QL	33. (*)	VG (b)	Fruit: anthocyanin coloration underneath calyx		
			absent	Pingtung Long, Ronde de Valence	1
			present	Baluroi	9
34. QN	34.	VG (b)	Fruit: intensity of anthocyanin coloration underneath calyx		
			weak	Short Tom	3
			medium	Black Beauty	5
			strong	Baluroi	7
35. QN	35.	VG (b)	Fruit: size of calyx		
			very small	Whitegg	1
			small	Dourga	3
			medium	Baluroi	5
			large	Larga Morada	7
			very large	Solara	9

CPVO N°	UPOV N°	Stage, Method	Characteristics	Examples	Note		
36.	36.	VG	Fruit: anthocyanin coloration of calyx				
			(*)	(b)	absent	Whitegg	1
QL			present	Short Tom	9		
37.	37.	VG	Fruit: intensity of anthocyanin coloration of calyx				
			QN	(b)	very weak	Dourga	1
					weak	Baluroi	3
					medium	Mileda	5
					strong	De Barbentane	7
			very strong	Ronde de Valence, Short Tom	9		
38.	38.	VG	Fruit: spininess of calyx				
			(*)	(b)	absent or very weak	Freia	1
			(+)	(+)	weak	Bonica	3
			QN		medium	Baluroi	5
					strong	Bibo	7
			very strong		9		
39.	39.	VG	Fruit: creasing of calyx				
			QN	(b)	very weak		1
					weak	Telar	3
					medium	Bonica	5
					strong	Talina	7
			very strong	Linda	9		
40.	40.	VG	Fruit: colour of flesh				
			PQ	(*)	(b)	whitish	Dourga
G			greenish	Baluroi	2		

CPVO N°	UPOV N°	Stage, Method	Characteristics	Examples	Note
41.	42.	VG	Time of beginning of flowering		
QN	(*)		early	Prelane	3
			medium	Bonica	5
			late	Monstrueuse de New York	7

EXPLANATIONS AND METHODS

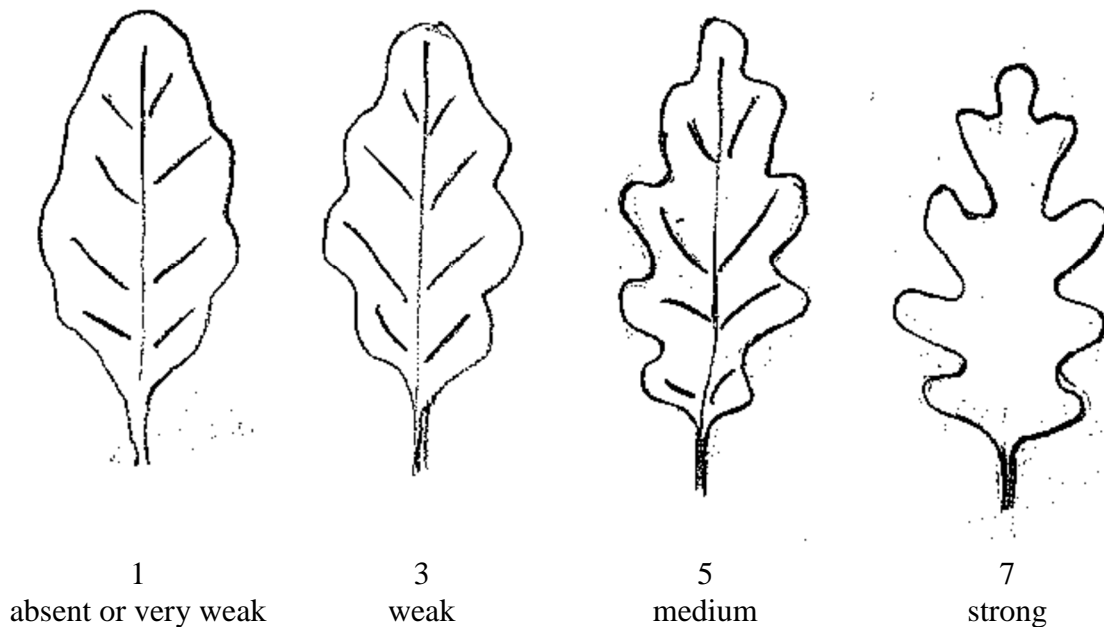
Explanations covering several characteristics

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

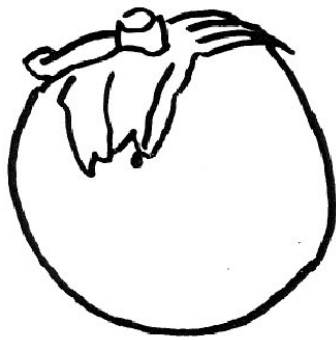
- (a) Plant and leaf: all observations on the plant and the leaves should be made after the first inflorescence starts to flower and before the start of the harvest.
- (b) Fruit: all observations on the fruit should be made on the first normally developed fruits.

Ad. 10: Leaf blade: sinuation of margin

Sinuation of margin is a kind of lobing (but not entirely unto the midrib) which arises from incision of the leaf margin. It must be explained that it does not involve undulation of the margin.



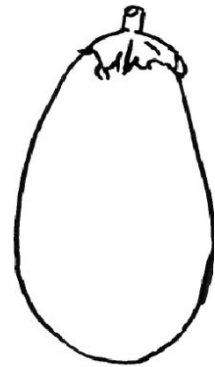
Ad. 19: Fruit: general shape



1
globular



2
ovoid



3
obovate



4
pear shaped



5
club shaped



6
ellipsoid



7
cylindrical

Ad 21: Fruit: apex



1
indented



2
flattened

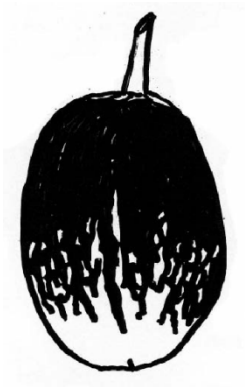


3
rounded



4
pointed

Ad 27: Fruit patches



9
present

Ad 28: Fruit stripes

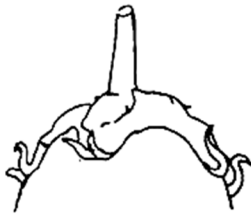


9
present

Ad 38: Fruit: spininess of calyx



1
absent or very weak



3⁻
weak



5
medium



7
strong

LITERATURE

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Phillips, Roger & Rix, Martyn, 1995: “Vegetables,” Macmillan Reference Books.

Daunay, M. C., Lester, R. N., Ano, G., 2001: “Eggplant,” p. 199-222 in Tropical Plant Breeding (569 p.), Scient. Ed., Charrier, A., Jacquot, M., Hamon, S., Nicolas, D., CIRAD; Science Publishers, Inc., Enfield (USA), Plymouth UK, 569 p.

ANNEX II

The Technical Questionnaire is available on the CPVO website under the following reference:
CPVO-TQ/117/1