European Union
Community Plant Variety Office

PROTOCOL FOR DISTINCTNESS, UNIFORMITY AND STABILITY TESTS

***Phaseolus coccineus* L.**

RUNNER BEAN

UPOV Species Code: PHASE_COC

Adopted on 21/03/2007

I SUBJECT OF THE PROTOCOL

The protocol describes the technical procedures to be followed in order to meet the Council Regulation (EC) No. 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/9/5 dated 09/04/2003 for the conduct of tests for Distinctness, Uniformity and Stability. This protocol applies for all varieties of ***Phaseolus coccineus* 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 seeds:	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 requirement:	-
Labelling of sample:	- Species - File number of the application allocated by the CPVO - Breeder's reference - Examination office's 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 variety collection only if plant material is available to make a technical examination.

Pursuant to Article 7 of Council Regulation (EC) 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 to co-ordinate the work with other Offices involved in DUS testing of runner bean. 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 the Annex I. 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 (EC) No. 1239/95, to insert additional characteristics and their expression 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 characteristics used for grouping could be the following:

a) Plant: growth type (characteristic 2)

b) Flower: colour of standard (characteristic 12)

c) Flower: colour of wing (characteristic 13)

d) Pod: suture strings (characteristic 17)

e) Seed: main colour (characteristic 29)

f) Varieties with seeds with more than one colour only: Seed: predominant secondary colour (characteristic 30)

g) Varieties with seeds with more than one colour only: Seed: distribution of predominant secondary colour (characteristic 31)

5. Trial designs and growing conditions

The minimum duration of tests will normally be two independent growing cycles. 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

Each test should include 60 plants divided between two or more replicates.

All observations determined by measurement or counting should be made on 30 plants or parts of 30 plants.

6. Special tests

In accordance with Article 83(3) of Council Regulation (EC) No. 2100/94, an applicant may claim either in the Technical Questionnaire or during the test that a candidate variety 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 (EC) No. 2100/94.

b) **Uniformity**

For the assessment of uniformity, relative uniformity standards should be used.

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 from the Examination Office 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 as well as the final report shall be sent by the Examination Office to the CPVO.

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ANNEXES TO FOLLOW

ANNEX I

Legend:

Note: The asterisk (*) in the UPOV numbered characteristics is there for information purposes and denotes those characteristics which should always be observed when utilising a UPOV guideline.

(+) See explanations on the Table of characteristics
(a) – (b) See explanations on the table of characteristics

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.

ANNEX II

ANNEX I

TABLE OF CHARACTERISTICS TO BE USED IN DUS TESTS AND PREPARATION OF DESCRIPTIONS

CPVO N°	UPOV N°	Stage, Method	Characteristics	Examples	Note
1.	**1.**	**QL**	**Plant: anthocyanin coloration of hypocotyl**		
	(*)	**VG**	absent	Emergo, White Lady	1
			present	Fergie, Streamline	9
2.	**2.**	**QL**	**Plant: growth type**		
	(*)	**VG**	dwarf	Pickwick	1
G			climbing	Enorma	2
3.	**3.**	**QN**	**Dwarf bean varieties only: Plant: height**		
		VG	short		3
			medium	Hammond's Dwarf Scarlet	5
			tall		7
4.	**4.**	**QN**	**Climbing bean varieties only: Plant: start of climbing (80% of plants)**		
		VG	early	Butler	3
			medium	Flame, White Lady	5
			late	White Apollo	7
5.	**5.**	**QN**	**Climbing bean varieties only: Plant: speed of climbing**		
		VG	slow	White Apollo	3
			medium	Emergo Stringless	5
			rapid	Butler, Fergie	7
6.	**6.**	**QN**	**Leaf: ground colour**		
		VG	yellow green	Sun Bright	1
			green	Kelvedon Stringless	2

CPVO N°	UPOV N°	Stage, Method	Characteristics	Examples	Note
7.	**7.**	**QN**	**<u>Varieties with green colour only</u>: intensity of colour**		
	(*)	**VG**	light	Red Rum, White Lady	3
			medium	Galaxy, Kelvedon Stringless	5
			dark	Emergo Stringless, Pallas	7
8.	**8.**	**QN**	**Leaf: blistering**		
	(*)	**VG**	weak	Desiree, Titan	3
			medium	Riley	5
			strong	Enorma	7
9.	**9.**	**QN**	**Terminal leaflet: size**		
		VG	small	Pallas, Sun Bright	3
			medium	Red Rum	5
			large	Emergo	7
10.	**10.**	**PQ**	**Terminal leaflet: shape**		
(+)	**(+)**	**VG**	triangular	Red Rum	1
			triangular to circular	Flame	2
			circular		3
			circular to quadrangular	Pallas	4
			quadrangular	Armstrong, Sun Bright	5
11.	**11.**	**QN**	**Terminal leaflet: apex**		
(+)	**(+)**	**VG**	short acuminate		3
			medium acuminate	Armstrong	5
			long acuminate	Pallas	7
12.	**12.**	**PQ**	**Flower: colour of standard**		
	(*)	**VG**	white	Desiree, Emergo	1
			pink	Riley	2
G			red	Armstrong, Painted Lady, Streamline	3

CPVO N°	UPOV N°	Stage, Method	Characteristics	Examples	Note
13.	**13.**	**PQ**	**Flower: colour of wing**		
	(*)	**VG**	white	Desiree, Painted Lady	1
			pink	Riley	2
G			red	Armstrong, Streamline	3
14.	**14.**	**QN**	**Pod: length (including beak)**		
(a)	**(*)**	**VG/MS**	very short	Sun Bright	1
	(a)		short	Esparot, Painted Lady	3
			medium	Emergo	5
			long	Armstrong	7
			very long	Liberty	9
15.	**15.**	**QN**	**Pod: maximum median width**		
(a)	**(a)**	**VG/MS**	narrow	Sun Bright	3
			medium	Armstrong, Riley	5
			broad	Titan	7
16.	**16.**	**QN**	**Pod: intensity of green colour**		
(a)	**(a)**	**VG**	very light	Sun Bright	1
			light	Emergo	3
			medium	Armstrong, Esparot	5
			dark	Pallas	7
			very dark		9
17.	**17.**	**QL**	**Pod: suture strings**		
(a)	**(*)**	**VG**	absent	Armstrong, Emergo Stringless	1
G	**(a)**		present	Enorma, Kelvedon Marvel	9

CPVO N°	UPOV N°	Stage, Method	Characteristics	Examples	Note
18.	**18.**	**QN**	**Pod: degree of curvature**		
(a)	**(a)**	**VG**	absent or very slight	Hestia	1
			slight	Red Rum	3
			medium	Painted Lady	5
			strong	Galaxy	7
			very strong		9
19.	**19.**	**PQ**	**Pod: shape of curvature**		
(+)	**(+)**	**VG**	concave		1
(a)	**(a)**		s-shaped		2
			convex		3
20.	**20.**	**QN**	**Pod: shape of distal part (excluding beak)**		
(+)	**(+)**	**VG**	pointed	Emergo	1
(a)	**(a)**		pointed to truncate	Fergie	2
			truncate	Kelvedon Stringless	3
21.		**QN**	**Pod: texture of surface**		
(a)		**VG**	smooth or slightly rough	Pallas, Aintree	1
			moderately rough	Enorma	2
			very rough	Emergo, Streamline	3
22.	**21.**	**QN**	**Pod: length of beak**		
(a)	**(a)**	**VG**	short	Armstrong, Desiree	3
			medium	Titan	5
			long	Flame, Red Rum	7

CPVO N°	UPOV N°	Stage, Method	Characteristics	Examples	Note
23.	**22.**	**QN**	**Pod: curvature of beak**		
(+)	**(+)**	**VG**	absent or very weak	Sun Bright	1
(a)	**(a)**		weak	Emergo, Red Rum	3
			medium	Desiree, Galaxy	5
			strong	Armstrong	7
			very strong		9
24.	**23.**	**QN**	**Pod: constrictions (at harvest maturity)**		
(a)	**(a)**	**VG**	absent or very weak	Titan	1
			weak	Galaxy, Red Rum	3
			medium	Armstrong, Emergo	5
			strong	Enorma	7
			very strong		9
25.	**24.**	**QN**	**Seed: weight**		
(b)	**(*)**	**MG**	very low	Sun Bright	1
	(b)		low	Esparot	3
			medium	Hammond's Dwarf Scarlet	5
			high	Streamline Stringless	7
			very high	Liberty	9
26.	**25.**	**PQ**	**Seed: shape of median longitudinal section**		
(+)	**(+)**	**VG**	narrow elliptic	Painted Lady	1
(b)	**(b)**		elliptic	Emergo, Pallas	2
			broad elliptic	Galaxy, Prizewinner Stringless	3
			kidney shaped	Armstrong, Flame, Red Rum	4
27.	**26.**	**PQ**	**Seed: shape of median cross-section**		
(+)	**(+)**	**VG**	narrow elliptic	Desiree	1
(b)	**(b)**		elliptic	Armstrong, Flame, Red Rum	2
			circular		3

CPVO N°	UPOV N°	Stage, Method	Characteristics	Examples	Note
28.	**27.**	**QL**	**Seed: number of colours**		
(b)	**(*)**	**VG**	one	Emergo, Riley	1
	(b)		two	Crusader, Enorma	2
29.	**28.**	**PQ**	**Seed: main colour**		
	(*)	**VG**	white	Desiree, Emergo	1
			light tan	Melange, Painted Lady	2
			pinkish purple	Armstrong, Bonela, Sun Bright	3
			violet	Ivanhoe	4
G			black	Riley	5
30.	**29.**	**QL**	**Varieties with seeds with more than one colour only: Seed: predominant secondary colour**		
(b)	**(*)**	**VG**	brown	Painted Lady	1
G	**(b)**		black	Armstrong	2
31. **(+)**	**30.** **(+)** **(*)**	**QL**	**Varieties with seeds with more than one colour only: Seed: distribution of predominant secondary colour**		
(b)	**(b)**	**VG**	spotted	Enorma, Prijswinner	1
G			mottled	Crusader, Kelvedon Stringless	2
32.	**31.**	**QN**	**Varieties with seeds: main colour white only: Seed: veining**		
(b)	**(b)**	**VG**	weak	Enorma	3
			medium	Desiree	5
			strong		7
33.	**32.**	**QL**	**Seed: colour of hilar ring**		
		VG	same colour as seed	Desiree	1
			different colour to seed	Flame, Red Rum	2

CPVO N°	UPOV N°	Stage, Method	Characteristics	Examples	Note
34.	**33. (*)**	**QN**	**Time of flowering (50% of the plants with at least one flower)**		
		MG	early	Hestia, Red Rum	3
			medium	Armstrong, Flame	5
			late	Esparot, Sun Bright	7

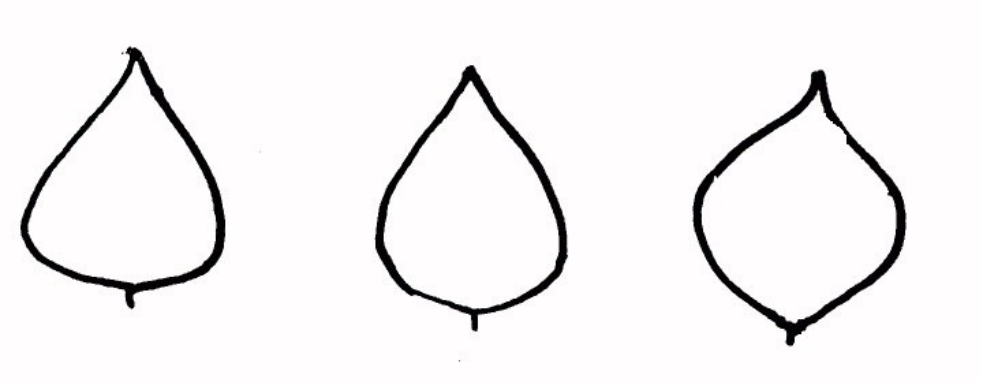
EXPLANATIONS AND METHODS

Explanations covering several characteristics

(a) Pod: Observations on the pod should be made at fresh harvest maturity

(b) Seed: All observations on the seed should be made at the mature dry stage on the harvest material

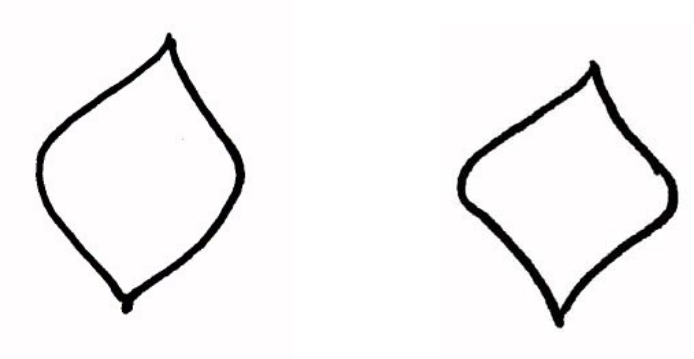
Ad. 10: Terminal leaflet: shape



1
triangular

2
triangular to circular

3
circular



4
circular to quadrangular

5
quadrangular

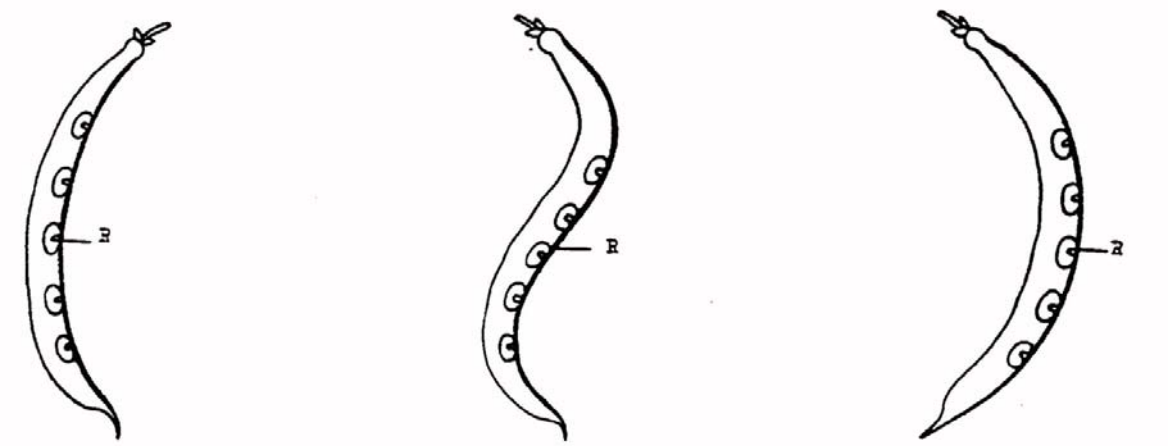
Ad. 11: Terminal leaflet: apex

3
short acuminate

5
medium acuminate

7
long acuminate

Ad. 19: Pod: shape of curvature

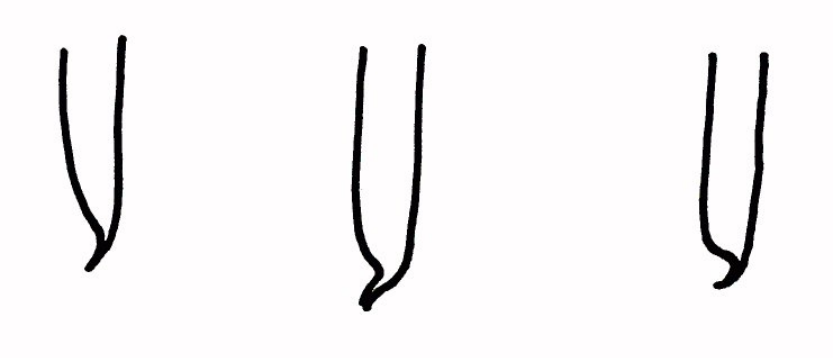


1
concave

2
s-shaped

3
convex

Ad. 20: Pod: shape of distal part (excluding beak)

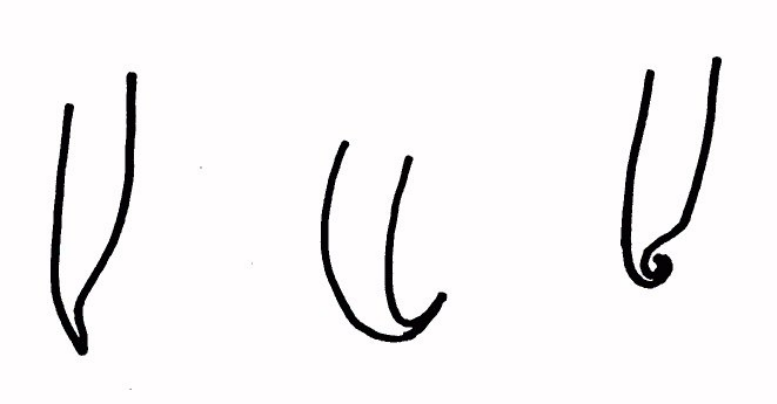


1
pointed

2
pointed to truncate

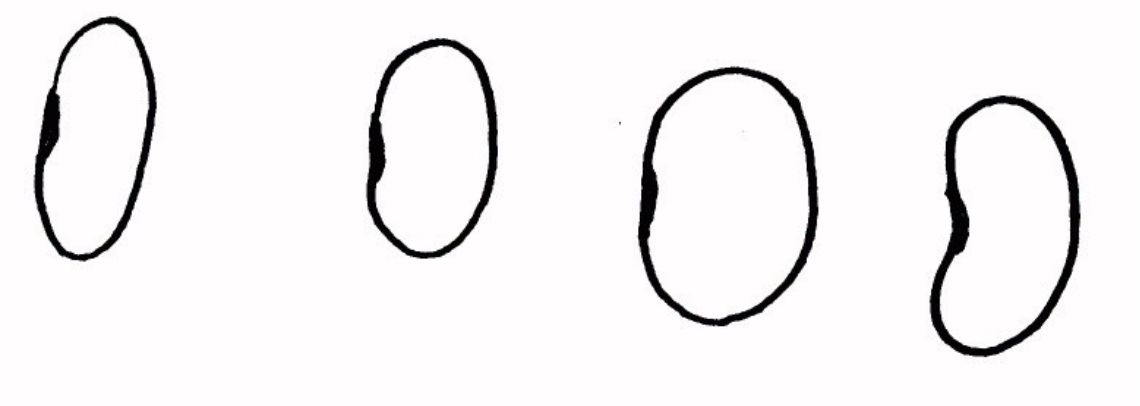
3
truncate

Ad. 23: Pod: curvature of beak



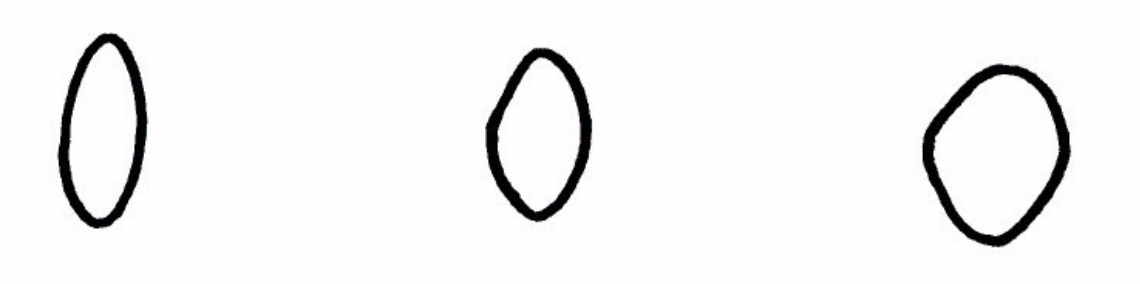
3	5	7
weak	medium	strong

Ad. 26: Seed: shape of median longitudinal section



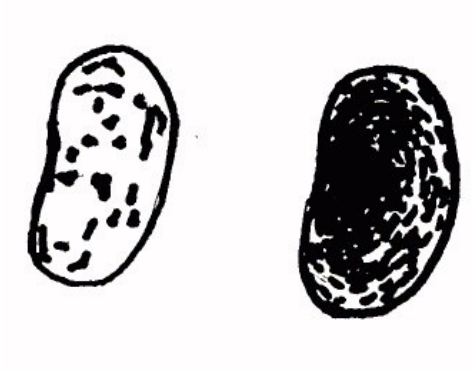
1	2	3	4
narrow elliptic	elliptic	broad elliptic	kidney shaped

Ad. 27: Seed: shape of median cross-section



1	2	3
narrow elliptic	elliptic	circular

Ad. 31: Seed: distribution of predominant secondary colour



1	2
spotted	mottled

LITERATURE

Bowring, J.D.C., 1970: “The identification of varieties of Runner Bean (*Phaseolus coccineus* L.)” J. Nat. inst. Agric. Botany 12, 46-56.

Hedrick, V.P., 1931: “Beans of New York” Vol I, Part II, Vegetables of New York.

Sneddon J.L. and Squibbs F.L., 1963: “Differences of seed stocks of runner beans” J. Nat. inst. Agric. Botany 9, 346-352.

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ANNEX II

European Union
Community Plant Variety Office

TECHNICAL QUESTIONNAIRE

to be completed in connection with an application for Community Plant Variety Rights
Please answer all questions. A question without any answer will lead to a non-attribution of an application date. In cases where a field / question is not applicable, please state so.

1. **Botanical taxon:** Name of the genus, species or sub-species to which the variety belongs and common name

***Phaseolus coccineus* L.**

RUNNER BEAN

2. **Applicant(s):** Name(s) and address(es), phone and fax number(s), Email address, and where appropriate name and address of the procedural representative

3. **Variety denomination**

a) Where appropriate proposal for a variety denomination:

b) Provisional designation (breeder's reference):

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

4.1 Breeding, maintenance and reproduction of the variety.
Please indicate breeding scheme, parents and other relevant information.

4.2 Geographical origin of the variety: the region and the country in which the variety was bred or discovered and developed

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

Characteristics		Example varieties	Note
5.1 (2)	**Plant: growth type**		
	dwarf	Pickwick	1 [ ]
	climbing	Enorma	2 [ ]
5.2 (12)	**Flower: colour of standard**		
	white	Desiree, Emergo	1 [ ]
	pink	Riley	2 [ ]
	red	Armstrong, Painted Lady, Streamline	3 [ ]
5.3 (13)	**Flower: colour of wing**		
	white	Desiree, Painted Lady	1 [ ]
	pink	Riley	2 [ ]
	red	Armstrong, Streamline	3 [ ]
5.4 (17)	**Pod: suture string**		
	absent	Armstrong, Emergo Stringless	1 [ ]
	present	Enorma, Kelvedon Marvel	9 [ ]

Characteristics		Example varieties	Note
5.5 (29)	**Seed: main colour**		
	white	Desiree, Emergo	1 [ ]
	light tan	Melange, Painted Lady	2 [ ]
	pinkish purple	Armstrong, Bonela, Sun Bright	3 [ ]
	violet	Ivanhoe	4 [ ]
	black	Riley	5 [ ]
5.6 (30)	**<u>Varieties with seeds with more than one colour only:</u> Seed: predominant secondary colour**		
	brown	Painted Lady	1 [ ]
	black	Armstrong	2 [ ]
5.7 (31)	**<u>Varieties with seeds with more than one colour only:</u> Seed: distribution of predominant secondary colour**		
	spotted	Enorma, Prijswinner	1 [ ]
	mottled	Crusader, Kelvedon Stringless	2 [ ]

6. Similar varieties and differences from these varieties:

Denomination of similar variety	Characteristic in which the similar variety is different[1)]	State of expression of similar variety	State of expression of candidate variety

1) 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

[ ] YES, please specify

[ ] NO

7.3 Other information

[ ] YES, please specify

[ ] NO

8. GMO-information required

The variety represents a Genetically Modified Organism within the meaning of Article 2(2) of Council Directive 2001/18/EC of 12/03/2001.

[ ] YES [ ] NO

If yes, please add a copy of the written attestation of the responsible authorities stating that a technical examination of the variety under Articles 55 and 56 of the Basic Regulation 2100/94 does not pose risks to the environment according to the norms of the above-mentioned Directive.

9. Information on plant material to be examined

9.1 The expression of a characteristic or several characteristics of a variety may be affected by factors, such as pests and disease, chemical treatment (e.g. growth retardants or pesticides), effects of tissue culture, different rootstocks, scions taken from different growth phases of a tree, etc.

9.2 The plant material should not have undergone any treatment which would affect the expression of the characteristics of the variety, unless the competent authorities allow or request such treatment. If the plant material has undergone such treatment, full details of the treatment must be given. In this respect, please indicate below, to the best of your knowledge, if the plant material to be examined has been subjected to:

(a) Microorganisms (e.g. virus, bacteria, phytoplasma)	[ ] Yes	[ ] No
(b) Chemical treatment (e.g. growth retardant or pesticide)	[ ] Yes	[ ] No
(c) Tissue culture	[ ] Yes	[ ] No
(d) Other factors	[ ] Yes	[ ] No

Please provide details of where you have indicated "Yes":

I/we hereby declare that to the best of my/our knowledge the information given in this form is complete and correct.

Date Signature Name

[End of document]