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INTERNATIONAL UNION FOR THE PROTECTION OF NEW VARIETIES OF PLANTS

GENEVA

DRAFT

FRENCH BEAN

UPOV code: PHASE_VUL

(*Phaseolus vulgaris* L.)

GUIDELINES

FOR THE CONDUCT OF TESTS

FOR DISTINCTNESS, UNIFORMITY AND STABILITY

prepared by an expert from France

to be considered by the
Technical Working Party for Vegetables at its thirty-eighth session,
to be held in Seoul from June 7 to 11, 2004
and the
Technical Working Party for Agricultural Crops at its thirty-third session,
to be held in Poznań, Poland, from June 28 to July 2, 2004

Alternative Names:*

Botanical name	*English*	*French*	*German*	*Spanish*
Phaseolus vulgaris L	French Bean	Haricot	Gartenbohne	Judía común, Alubia

The purpose of these guidelines ("Test Guidelines") is to elaborate the principles contained in the General Introduction (document TG/1/3), and its associated TGP documents, into detailed practical guidance for the harmonized examination of distinctness, uniformity and stability (DUS) and, in particular, to identify appropriate characteristics for the examination of DUS and production of harmonized variety descriptions.

* These names were correct at the time of the introduction of these Test Guidelines but may be revised or updated. [Readers are advised to consult the UPOV Code, which can be found on the UPOV Website (www.upov.int), for the latest information.]

ASSOCIATED DOCUMENTS

These guidelines ("Test Guidelines") should be read in conjunction with document TG/1/3, "General Introduction to the Examination of Distinctness, Uniformity and Stability and the Development of Harmonized Descriptions of New Varieties of Plants" (hereinafter referred to as the "General Introduction") and its associated "TGP" documents.

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1. Subject of these Test Guidelines

These Test Guidelines apply to all varieties of *Phaseolus vulgaris* L.

2. Material Required

2.1 The competent authorities decide on the quantity and quality of the plant material required for testing the variety and when and where it is to be delivered. Applicants submitting material from a State other than that in which the testing takes place must ensure that all customs formalities and phytosanitary requirements are complied with.

2.2 The material is to be supplied in the form of seed.

2.3 The minimum quantity of plant material, to be supplied by the applicant, should be:

1,000 g → ***F :2000 g. or 20000 seeds***
CZ propose 2000 seeds
PO agree French proposal
D propose 1 kg or 10000 seeds

The seed should meet the minimum requirements for germination, species and analytical purity, health and moisture content, specified by the competent authority. In cases where the seed is to be stored, the germination capacity should be as high as possible and should, be stated by the applicant.

2.4 The plant material supplied should be visibly healthy, not lacking in vigor, nor affected by any important pest or disease.

2.5 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 it has been treated, full details of the treatment must be given.

3. Method of Examination

3.1 Number of Growing Cycles

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

3.2 Testing Place

Tests are normally conducted at one place. In the case of tests conducted at more than one place, guidance is provided in TGP/9 “Examining Distinctness”.

3.3 Conditions for Conducting the Examination

3.3.1 The tests should be carried out under conditions ensuring satisfactory growth for the expression of the relevant characteristics of the variety and for the conduct of the examination.

3.3.2 The recommended method of observing the characteristic is indicated by the following key in the second column of the Table 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

3.4 Test Design

3.4.1 For dwarf beans, each test should be designed to result in a total of at least 150 plants, which should be divided between two or more replicates.

3.4.2 For climbing beans, each test should be designed to result in a total of at least 60 plants, which should be divided between two or more replicates.

3.5 Number of Plants / Parts of Plants to be Examined

3.5.1 Unless otherwise indicated, all observations should be made on 20 plants or parts taken from each of 20 plants.

3.5.2 When resistance characteristics are used for assessing distinctness, uniformity and stability, records must be taken under conditions of controlled infection on at least 20 plants.

3.6 Additional Tests

Additional tests, for examining relevant characteristics, may be established.

4. Assessment of Distinctness, Uniformity and Stability

4.1 Distinctness

4.1.1 General Recommendations

It is of particular importance for users of these Test Guidelines to consult the General Introduction prior to making decisions regarding distinctness. However, the following points are provided for elaboration or emphasis in these Test Guidelines.

4.1.2 Consistent Differences

The differences observed between varieties may be so clear that more than one growing cycle is not necessary. In addition, in some circumstances, the influence of the environment is not such that more than a single growing cycle is required to provide assurance that the differences observed between varieties are sufficiently consistent. One means of ensuring that a difference in a characteristic, observed in a growing trial, is sufficiently consistent is to examine the characteristic in at least two independent growing cycles.

4.1.3 Clear Differences

Determining whether a difference between two varieties is clear depends on many factors, and should consider, in particular, the type of expression of the characteristic being examined, i.e. whether it is expressed in a qualitative, quantitative, or pseudo-qualitative manner. Therefore, it is important that users of these Test Guidelines are familiar with the recommendations contained in the General Introduction prior to making decisions regarding distinctness.

4.2 Uniformity

4.2.1 It is of particular importance for users of these Test Guidelines to consult the General Introduction prior to making decisions regarding uniformity. However, the following points are provided for elaboration or emphasis in these Test Guidelines:

4.2.2 For the assessment of uniformity of dwarf beans, a population standard of 1 % and an acceptance probability of at least 95 % should be applied. In the case of a sample size of 150 plants, 4 off-types are allowed.

4.2.3 For the assessment of uniformity of climbing beans, a population standard of 2 % and an acceptance probability of at least 95 % should be applied. In the case of a sample size of 60 plants, 3 off-types are allowed.

F propose 1 %.

4.3 Stability

4.3.1 In practice, it is not usual to perform tests of stability that produce results as certain as those of the testing of distinctness and uniformity. However, experience has demonstrated that, for many types of variety, when a variety has been shown to be uniform, it can also be considered to be stable.

4.3.2 Where appropriate, or in cases of doubt, stability may be tested, either by growing a further generation, or by testing a new seed stock to ensure that it exhibits the same characteristics as those shown by the previous material supplied.

5. Grouping of Varieties and Organization of the Growing Trial

5.1 The selection of varieties of common knowledge to be grown in the trial with the candidate varieties and the way in which these varieties are divided into groups to facilitate the assessment of distinctness are aided by the use of grouping characteristics.

5.2 Grouping characteristics are those in which the documented states of expression, even where produced at different locations, can be used, either individually or in combination with other such characteristics: (a) to select varieties of common knowledge that can be excluded from the growing trial used for examination of distinctness; and (b) to organize the growing trial so that similar varieties are grouped together.

5.3 The following have been agreed as useful grouping characteristics:

(a) Plant: growth type (characteristic 2)
(b) Pod: shape of cross-section (through seed) (characteristic 19)
(c) Pod: ground color (characteristic 21)
(d) Pod: stringiness (characteristic 26)
(e) Seed: number of colors (characteristic 39)

F : 1 – Plant : growth type (2)
2 – Flower : Colour of standard (14) → to add. (CZ – PO agree)
3 - Pod : median width (18) → to add. – (CZ Not agree – PO agree)
4 – Pod : shape of cross-section (19)
5 – Pod : ground colour (21)
6 – Pod : stringless (26)
7 – Seed : weight (34) → to add. → (Not agree CZ/D – PO agree)
8 – Seed : number of colours (39)
9 – Resistance to bean anthracnose race Lambda (46.1)
10 – Resistance to Bean common mosaic virus (47)
D propose to add : Seed main color
PO propose to add resistance to Bean anthracnose race Gamma (46.2) instate of race Lambda (46.1)

[Alternative proposed by France to use growth types]

5.3 : In the first place, the collection should be divided according to the following growth types :

Plant : growth type

1. Dwarf bean, white seed, green pod, without stringiness	Ypon, Wonder, Roma II
2. Dwarf bean, white seed, yellow pod, without stringiness	Impact, Crocus, Safran
3. Dwarf bean, white seed, purple pod, without stringiness	-
4. Dwarf bean, white seed, green pod, with stringiness	Flagrano, Meribel
5. Dwarf bean, white seed, yellow pod, with stringiness	Graindor
6. Dwarf bean, white seed, purple pod, with stringiness	-
7. Dwarf bean, color seed, green pod, without stringiness	Rugally, Oxinel
8. Dwarf bean, color seed, yellow pod, without stringiness	Cador, Rocbrun
9. Dwarf bean, color seed, purple pod, without stringiness	Purpiat, Purple Queen
10. Dwarf bean, color seed, green pod, with stringiness	Fin de Bagnols, Aiguillon
11. Dwarf bean, color seed, yellow pod, with stringiness	-
12. Dwarf bean, color seed, purple pod, with stringiness	-
13. Climbing bean, white seed, green pod, without stringiness	Ramses, Robin, Hilda
14. Climbing bean, white seed, yellow pod, without stringiness	Golde Marie, Goldengate
15. Climbing bean, white seed, purple pod, without stringiness	-
16. Climbing bean, white seed, green pod, with stringiness	Soisson vert
17. Climbing bean, white seed, yellow pod, with stringiness	-
18. Climbing bean, white seed, purple pod, with stringiness	-
19. Climbing bean, color seed, green pod, without stringiness	Emerite, Fortex
20. Climbing bean, color seed, yellow pod, without stringiness	Felissa, Or du Rhin, Ramdor

21. Climbing bean, color seed, purple pod, without stringiness	A cosse violette sans fil, Melissa, Carminat
22. Climbing bean, color seed, green pod, with stringiness	Diamant
23. Climbing bean, color seed, yellow pod, with stringiness	Torrent d'Or, Robsplash
24. Climbing bean, color seed, purple pod, with stringiness	-

For further information, see section 8 "key to bean types" [still to be provided] .

5.4 Guidance for the use of grouping characteristics, in the process of examining distinctness, is provided through the General Introduction.

6. Introduction to the Table of Characteristics

6.1 Categories of Characteristics

6.1.1 Standard Test Guidelines Characteristics

Standard Test Guidelines characteristics are those which are approved by UPOV for examination of DUS and from which members of the Union can select those suitable for their particular circumstances.

6.1.2 Asterisked Characteristics

Asterisked characteristics (denoted by *) are those included in the Test Guidelines which are important for the international harmonization of variety descriptions and should always be examined for DUS and included in the variety description by all members of the Union, except when the state of expression of a preceding characteristic or regional environmental conditions render this inappropriate.

6.2 States of Expression and Corresponding Notes

States of expression are given for each characteristic to define the characteristic and to harmonize descriptions. Each state of expression is allocated a corresponding numerical note for ease of recording of data and for the production and exchange of the description.

6.3 Types of Expression

An explanation of the types of expression of characteristics (qualitative, quantitative and pseudo-qualitative) is provided in the General Introduction.

6.4 Example Varieties

Where appropriate, example varieties are provided to clarify the states of expression of each characteristic.

6.5 Legend

(*) Asterisked characteristic

QL Qualitative characteristic
QN Quantitative characteristic
PQ Pseudo-qualitative characteristic

MG: single measurement of a group of plants or parts of plants – see Section 3.3.2
MS: measurement of a number of individual plants or parts of plants – see Section 3.3.2
VG: visual assessment by a single observation of a group of plants or parts of plants – see Section 3.3.2
VS: visual assessment by observation of individual plants or parts of plants – see Section 3.3.2

(+) See Explanations on the Table of Characteristics in Chapter 8.

(1) Growth type of example variety: D = dwarf variety
C = climbing variety.

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

		English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo (1)	Note/ Nota
1.	**VG**	**Plant: anthocyanin coloration of hypocotyl**	**Plante: pigmentation anthocyanique de l'hypocotyle**	**Pflanze: Anthocyan-färbung des Hypokotyls**			
QL		absent	absente	fehlend		Tuf(D)	1
		present	présente	vorhanden		Delinel(D), Vilbel(D)	9
				JP proposal :			
1 bis	***VG***	***Plant : intensity of anthocyanin coloration of hypocotyl***					
QN		***weak***	***faible***	***gering***			***3***
		medium	***moyenne***	***mittel***			***5***
		strong	***forte***	***stark***			***7***
2. (*)	**VG**	**Plant: growth type**	**Plante: type de croissance**	**Pflanze: Wuchstyp**			
QL		dwarf	nain	Buschform		Callide(D), Capitole(D)	1
		climbing	à rames	Stangenform		Phenomene(C), Bacle(C)	2
3.	**VG**	**Dwarf beans only: Plant: dwarf type**	**Haricot nain seulement: Plante: type nain**	**Nur Buschbohnen: Pflanze: Buschtyp**			
PQ		non-vining	non-filant	nicht rankend		Callide(D), Capitole(D)	1
		vining	filant	rankend		Great Northern(D), Felspar(D), Spinel(D)	2

		English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo (1)	Note/ Nota
4.	**VG**	**Dwarf beans only: Plant: height**	**Haricot nain seulement: Plante: hauteur**	**Nur Buschbohnen**	**Pflanze: Höhe**		
QN	**Or MS or MG**	low	basse	niedrig		Goldfish(D)	3
		medium	moyenne	mittel		Fori(D)	5
		high	haute	hoch		Nerina(D), Rote von Paris(D)	7
5.	**VG or MG**	**Climbing beans only Plant: start of climbing (80% of plants)**	**Haricot à rames seulement: Plante: précocité d'enroulement (80% des plantes)**	**Nur Stangenbohnen: Pflanze: Rankbeginn (80% der Pflanzen)**			
QN		early	précoce	früh		Perle von Marbach(C)	3
		medium	moyenne	mittel		Trebona (C)	5
		late	tardive	spät		Record©	7
		CZ : propose QN/MS					
6.	**VG**	**Climbing beans only: Plant: speed of climbing**	**Haricot à rames seulement: Plante: vitesse de croissance**	**Nur Stangenbohnen: Pflanze: Geschwindigkeit des Emporrankens**			
QN		slow	lente	langsam			3
		medium	moyenne	mittel		Meicy(C)	5
		rapid	rapide	schnell		Perle von Marbach(C)	7

CZ : need explanations

		English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo (1)	Note/ Nota
7 (*)	**VG**	**Leaf: intensity of green color**	**Feuille: couleur verte**	**Blatt: Grünfärbung**			
QN		very light	très claire	sehr hell			1
		light	claire	hell		Goldelfe(C), Rote von Paris(D)	3
		medium	moyenne	mittel		Fori(D), Valja(D	5
		dark	foncée	dunkel		Dubra(D), Goldfish(D), Silvia(C)	7
		very dark	très foncée	sehr dunkel		Diva(D)	9
		F propose : Leaf – Intensity of green color ***D, CZ, PO : agree***					
8.	**VG**	**Leaf: rugosity**	**Feuille: rugosité**	**Blatt: Wölbung zwischen den Nerven**			
QN		weak	faible	gering		Goldfish(D), Groffy(D), Record(C), Valja(D)	3
		medium	moyenne	mittel		Butterzart(D), Filetty(D), Fori(D), Neckarkönigin(C)	5
		strong	forte	stark		Loma(D)	7
9.	**VG**	**Terminal leaflet: size**	**Foliole terminale: taille**	**Foliole terminale: taille**			
QN		small	petite	klein		Goldfish(D)	3
		medium	moyenne	mittel		Prelude(D	5
		large	grande	gross		Facta(D), Longking(D), Rote von Paris(D)	7

		English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo (1)	Note/ Nota
10.	**VG**	**Terminal leaflet: shape**	**Foliole terminale: forme**	**Endfieder: Form**			
PQ							
		triangular	triangulaire	dreieckig		Aber(D), Candide(D)	1
		triangular to circular	triangulaire à circulaire	dreieckig bis rundlich		Facta (D)	2
		circular	circulaire	rundlich		Felix(D), Niver(D), Acarli(D)	3
		circular to quadrangular	circulaire à quadrangulaire	rundlich bis viereckig		Calas(D), Capitole (D), Dorabel(D)	4
		quadrangular	quadrangulaire	viereckig		Ace(D), Carlyn(D), Madrigal(D)	5

CZ : add drawing

11.	**VG**	**Terminal leaflet: apex**	**Foliole terminale: sommet**	**Endfieder: Spitze**			
QN		short acuminate	à pointe courte	kurz zugespitzt			3
		medium acuminate	à pointe moyenne	mittel zuge spitzt		Goldfish(D), Tuf(D)	5
		long acuminate	à pointe longue	lang zugespitzt		Nerina(D), Flo(D), Prelude(D)	7

CZ : add drawing

12.	**VG**	**<u>Dwarf beans only:</u> Inflorescences: location (at full flowering)**	**<u>Haricot nain seulement</u>: Inflorescences: position (à pleine floraison)**	**<u>Nur Buschbohnen</u>: Blütenstände: Sitz (in voller Blüte)**			
PQ		in foliage	dans le feuillage	im Laub		Ryco(D)	1
		partly in foliage	partiellement dans le feuillage	teilweise im Laub		Valja(D), Tuf(D)	2
		above foliage	au-dessus du feuillage	über dem Laub		Daisy(D), Goldetta(D)	3

CZ : propose to delete

		English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo (1)	Note/ Nota
13.	**VG**	**Flower: size of bract**	**Fleur: taille de la bractée florale**	**Blüte: Grösse der Braktee**			
QN		small	petite	klein		Fanion(D), Fidel(C), Markant(C), Nerina (D), Ryco (D)	3
		medium	moyenne	mittel		Meicy(C), Torrina(D)	5
		large	grande	gross		Label(D), Pfälzer Juni(D), Toplong(C)	7
14. **(*)**	**VG**	**Flower: color of standard**	**Fleur: couleur de l'étendard**	**Blüte: Farbe der Fahne**			
QL		white	blanc	weiss		Tuf(D)	1
		pink	rose	rosa		Maxi(D), Vilbel(D	2
		violet	violet	violett		Delinel(D), Purple Teepee(D)	3
15. **(*)**	**VG**	**Flower: color of wing**	**Fleur: couleur de l'aile**	**Blüte: Farbe des Flügels**			
QL		white	blanche	weiss		Tuf(D)	1
		pink	rose	rosa		Maxi(D), Vilbel(D)	2
		violet	violette	violett		Delinel(D), Purple Teepee(D)	3
16.	**VG**	**<u>White seeded varieties only</u>: Grain: color of immature seed (at beginning of swelling of pod)**	**<u>Variétés à grain blanc seulement</u>: Grain: couleur du grain immature (au début du gonflement du gousse)**	**<u>Nur für weissamige Sorten</u> Samen: Farbe des unreifen: Samens (zu Beginn des Schwellens der Hülse)**			
PQ		white	blanc	weiss		Jolanda(D)	1
		light green	vert clair	hellgrün		Castron(D)	2

D propose to delete

		English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo (1)	Note/ Nota
17.1 (*)	**MS**	**Dwarf beans only: Pod: length (including beak)**	**Haricot nain seulement Gousse: longueur (style inclus)**	**Nur Buschbohnen Hülse: Länge (ein: schliesslich Zahn)**			
QN		very short	très courte	sehr kurz			1
		short	courte	kurz		Prelude(D), Tuf(D)	3
		medium	moyenne	mittel		Amity(D), Lusia(D)	5
		long	longue	lang		Dubra(D), Loma(D)	7
		very long	très longue	sehr lang		Daisy(D), Longking(D), Maja(D)	9
		CZ, PO : propose to delete (including beak)					
17.2 (*)	**MS**	**Climbing beans only: Pod: length (as for 17.1)**	**Haricot à rames seulement: Gousse: longueur: (comme pour 17.1)**	**Nur Stangenbohnen: Hülse: Länge (wie unter 17.1)**			
QN		very short	très courte	sehr kurz			1
		short	courte	kurz		Juwagold(C)	3
		medium	moyenne	mittel			5
		long	longue	lang		Fidel(C)	7
		very long	très longue	sehr lang		Toplong(C	9
		CZ, PO : propose to delete (including beak)					
18.	**MS**	**Pod: median width**	**Gousse: largeur médiane**	**Hülse: mediane Breite**			
QN		narrow	étroite	schmal		Cabri(D), Necores(C), Tuf(D)	3
		medium	moyenne	mittel		Meicy(C), Regulex(D)	5
		broad	large	breit		Perle von Marbach(C), Pfälzer Juni(D)	7
		JP propose to add (at maximum point)					

		English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo (1)	Note/ Nota
18 bis	**MS**	***Pod : transversal width***	***F proposal***				
QN		***very narrow***	***très étroite***	***sehr schmall***		***Booster (D)***	1
		narrow	***étroite***	***schmal***		***Bergamo (D), Rentegevers (C)***	3
		medium	***moyenne***	***mittel***		***Impact (D), Flagrano (D), Donna (C)***	5
		broad	***large***	***breit***		***Mondiam (D), Maxidor (D), Emerite (C)***	7
		very broad	***très large***	***sehr breit***		***Kerprim (D), Hilda (C)***	9

D, SK, CZ agree. PO need explanation and propose thin, medium, thick

19. (*)	**VG**	**Pod: shape of cross section (through seed)**	**Gousse: forme de la section transversale (au niveau d'un grain)**	**Hülse: Form des Querschnitts (durch den Samen)**			
PQ		***narrow elliptic***	***elliptique étroite***				***1***
		elliptic to ovate	elliptique à ovale	elliptisch bis eiförmig		Pascal(D), Pfälzer Juni(D), Regulex(D)	2
		cordate	cordiforme	herzförmig			3
		circular	circulaire	rund		Tuf(D)	4
		"eight shaped"	en huit	Form einer liegenden 8 (breitrund)		Tendercrop White Seeded(D)	5

F propose to add a new level (narrow elliptic) – D, CZ, PO agree.
D propose to delete Cordate.

20. (+)	**MS**	**Pod: ratio transverse width/median width**	**Gousse: rapport largeur transversale/largeur médiane**	**Hülse: Verhältnis transversale Breite/ mediane Breite**			
QN		small	petit	klein		Pascal(D), Pfälzer Juni(D), Regulex(D)	3
		medium	moyen	mittel		Tuf(D)	5
		large	grand	gross		Tendercrop White Seeded(D)	7

		English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo (1)	Note/ Nota
21. (*) (+)	**VG**	**Pod: ground color**	**Gousse: couleur de fond**	**Hülse: Grundfarbe**			
QL		yellow	jaune	gelb		Goldmarie(C), Gold fish(D), Golddukat(D)	1
		green	verte	grün		Fortissima(C), Filetty(D), Diva(D)	2
		violet	violette	violett		Purpiat(D), Purple Teepee(D)	3
22. (+)	**VG**	**Pod: intensity of ground color**	**Gousse: intensité de la couleur de fond**	**Hülse: Intensität der Grundfarbe**			
QN		light	faible	hell			3
		medium	moyenne	mittel			5
		dark	forte	dunkel			7
23. (*)	**VG**	**Pod: secondary color**	**Gousse: couleur secondaire**	**Hülse: Nebenfarbe**			
QL		absent	absente	fehlend		Tuf(D)	1
		present	présente	vorhanden		Marbel(D)	9
24. (*)	**VG**	**Pod: hue of secondary color**	**Gousse: teinte de la couleur secondaire**	**Hülse: Ton der Nebenfarbe**			
QL		red	rouge	rot		Borlotto lingua di fuoco 2(C)	
		violet	violette	violett		Marbel(D)	
25.	**VG**	**Pod: density of flecks of secondary color**	**Gousse: densité des taches de la couleur secondaire**	**Hülse: Dichte der Flecken der Nebenfarbe**			
QN		sparse	faible	locker			3
		medium	moyenne	mittel			5
		dense	forte	dicht			7

		English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo (1)	Note/ Nota
25. bis	**VG**	***Pod : distribution of secondary color***	***PO proposal***				
QL		***A long the dorsal suture***	***Le long de la suture dorsale***				***1***
		on the whole surface	***sur toute la gousse***				***2***
26. (*)	**VG**						
QN		**Pod: stringiness**	**Gousse: fil**	**Hülse: Fädigkeit**			
		absent	absent	fehlend		Cabri(D), Tuf(D)	1
		present	présent	vorhanden		Facta(D), Marbel(D)	9
			CZ need explanations				
27. (+)	**VG**	**Pod: degree of curvature**	**Gousse: degré de la courbure**	**Hülse: Stärke der Krümmung**			
QN		absent or very slight	nulle ou très faible	fehlend oder sehr gering			1
		weak	faible	gering		Nerina(D)	3
		medium	moyenne	mittel			5
		strong	forte	stark		Goldfisch(D), Groffy(D), Ryco(D)	7
		very strong	très forte	sehr stark			9
28. (+)	**VG**	**Pod: shape of curvature**	**Gousse: forme de la courbure**	**Hülse: Art der Krümmung**			
PQ		concave	concave	konkav			1
		s-shaped	en S	s-förmig			2
		convex	convexe	konvex			3
			CZ need exemple varieties				

		English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo (1)	Note/ Nota
29. **(+)**	**VG**	**Pod: shape of distal part (excluding beak)**	**Gousse: forme de la partie distale (style truncate exclu)**	**Hülse: Form des Hülsenendes (ohne Zahn**			
PQ		acute	aiguë	spitz		Aiguillon(D), Calas (D), Cesar(D)	1
		acute to truncate	aiguë à tronquée	leicht ab- gestumpft		Faria(D), Aiguille vert(D	2
		truncate	tronquée	stumpf		Alcade(D), Divel(D), Afrio(D)	3
30. **(*)**	**VG**	**Pod: length of beak**	**Gousse: longueur du style**	**Hülse: Zahnlänge**			
QN		short	court	kurz		Amity(D), Ryco(D)	
		medium	moyen	mittel		Goldfish(D), Optimus(D)	
		long	long	lang		Facta(D), Golddukat(D), Vilbel(D)	
			SK propose QN/MS				
31.	**VG**	**Pod: curvature of beak**	**Gousse: courbure du style**	**Hülse: Zahnkrümmung**			
QN		absent or very weak	nulle ou très faible	fehlend oder sehr gering			1
		weak	faible	gering		Nerina(D)	3
		medium	moyenne	mittel			5
		strong	forte	stark		Goldfisch(D), Groffy(D), Ryco(D)	7
		very strong	très forte	sehr stark			9
32.	**VG**	**Pod: texture of sur face**	**Gousse: texture de la surface**	**Hülse: Struktur der Oberfläche**			
QN		smooth	lisse	glatt		Prelude(D), Tuf(D)	3
		medium rough	moyennement rugueuse	mittelrauh		Blauhilde(C), Daisy(D), Longking(D)	5
		rough	rugueuse	rauh			7

		English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo (1)	Note/ Nota
33.	**VG**	**Pod: constrictions (at dry stage)**	**Gousse: étranglements (au stade sec)**	**Hülse: Einschnürung (zum Zeitpunkt der Trockenreife)**			
QN		absent or very slight	absents ou très faibles	fehlend oder sehr gering		Pascal(D), Regulex(D)	
		slight	faibles	gering		Tuf(D)	
		medium	moyens	mittel			
		pronounced	prononcés	stark			
		very pronounced	très prononcés	sehr stark		Mechelse Tros(C)	

JP, CZ propose to delete (at dry stage) and add (at fresh stage)
D propose to delete.

34. (*)	**MS**	**Seed: weight**	**Grain: poids**	**Samen: Gewicht**			
QN		very low	très petit	sehr niedrig		Cabri(D), Decibel(D), Label(D)	1
		low	petit	niedrig		Belfin(D), Ingo(D)	3
		medium	moyen	mittel		Duplika(D), Juwagold(C), Konservenstolz(D)	5
		high	élevé	hoch		Fidel(C), Regulex(D)	7
		very high	très élevé	sehr hoch		Facta(D), Precores(C), Rote von Paris(D)	9

		English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo (1)	Note/ Nota
35.	**VG**	**Seed: shape of median longitudinal section**	**Grain: forme de la section longitudinale médiane**	**Samen: Form des medianen Längsschnitts**			
PQ/QL		circular	circulaire	rund		Rapsani(D), Coblan(D), Coco nain blanc précoce(D)	1
		circular to elliptic	circulaire à elliptique	rund bis elliptisch		Coco noir(D)	2
		elliptic	elliptique	elliptisch		Nerina(D), Pros(D) Tuf(D	3
		kidney-shaped	réniforme	nierenförmig		Orex(D), Palmares(D), Re Mida(D), Rubico(D)	4

PO propose to add a level – slightly rectangular 5 - Polanka

36.	**VG**	**<u>Varieties with kidney shaped seed only</u>: Seed: degree of curvature**	**<u>Variétés à grain réniforme seulement</u>: Grain: degré de courbure**	**<u>Nur Sorten mit nierenförmigen Samen</u>: Samen Grad der Krümmung:**			
QN		weak	faible	gering		Farcybel, Janus, Jakar	3
		medium	moyenne	mittel		Faria, Farno, Niver	5
		strong	forte	stark		Chevrier vert, Hador	7
37.	**VG**	**Seed: shape of median cross-section**	**Grain: forme de la section transversale médiane**	**Samen: Form des medianen Querschnitts**			
(+)							
PQ		flat	aplatie	flach		Soisson nain hatif(D)	1
		narrow elliptic	elliptique étroite	schmal elliptisch		Roi de Belges(D), Samurai(D)	2
		elliptic	elliptique	elliptisch		Orlinel(D), Pluto(D), Rachel(D)	3
		broad elliptic	elliptique large	breit elliptisch		Obélisque(D), Odessa(D), Primanor(D)	4
		circular	circulaire	rund		Pactol(D), Romulus(D), Starnel(D)	5

		English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo (1)	Note/ Nota
PO propose to modify – Seed thickness							
		Thin				***Facta***	***3***
		Medium				***Aura***	***5***
		Thick				***Polanka***	***7***
38.	**VG**	**Seed : with in cross-section**	**Grain : largeur en coupe transversale**	**Samen : Breite des Querschnitts**			
QN		narrow	étroit	schmal		Cabri (D), Golddukat (D)	3
		medium	moyen	mittel			5
		broad	large	breit		Pfälzer Juni (D), Rote von Paris (D)	7
SK,PO propose : QN/MS							
38. bis	**MS**	***Seed : Length (for dry seed varieties only)***	***PO proposal***				
QN		***short***	***courte***	***kurz***		***Raba***	***3***
		medium	***moyenne***	***mittel***		***Igolomska***	***5***
		long	***longue***	***lang***		***Nigeria***	***7***
F why for dry seed varieties only							
39. (*)	**VG**	**Seed: number of colors**	**Grain: nombre de couleurs**	**Samen: Anzahl Farben**			
QL		one	une	eine			1
		two	deux	zwei			2
		more than two	plus de deux	mehr als zwei			3

		English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo (1)	Note/ Nota
40. (*)	**VG**	**Seed: main color(largest area)**	**Grain: couleur principale (surface la plus grande)**	**Samen: Hauptfarbe (grösster gefärbter Teil)**			
QL		white	blanche	weiss		Goldfish(D), Tuf(D)	1
		green or greenish	verte ou verdâtre	grün oder grünlich		Muriel(D), Pascal(D)	2
		grey	grise	grau			3
		yellow	jaune	gelb		Gele Citroen(D)	4
		buff colored	chamois	beige		Blauhilde(C), Purple Teepee(D)	5
		brown	brune	braun		Primel(D), Sunray(D)	6
		red	rouge	rot		Flageolet rouge(D)	7
		violet	violette	violett			8
		black	noire	schwarz		Delinel(D), Vilbel(D)	9
		CZ translation of buff colored/beige					
41. (*) (+)	**VG**	**Seed: predominant secondary color**	**Grain: couleur secondaire prédominante**	**Samen: vorherrschende Nebenfarbe**			
QL		white	blanche	weiss			1
		grey	grise	grau			2
		yellow	jaune	gelb			3
		buff colored	chamois	beige			4
		brown	brune	braun			5
		red	rouge	rot		Fori(D)	7
		violet	violette	violett		Marbel(D)	8
		black	noire	schwarz		Brittle Wax(D)	9

		English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo (1)	Note/ Nota
42. **(+)**		**Seed: distribution of predominant secondary color**	**Grain: distribution de la couleur secondaire prédomiante**	**Samen: Verteilung der vorherrschenden Neben- farbe**			
QL		around hilum	autour du hile	um Nabelring		Brittle Wax(D)	1
		in streaks	en rayures	in Streifen			2
		on half of grain	sur la moitié du grain	auf der Hälfte des Samens			3
		in patches	en taches	in Flecken			4
		CZ need more explanations. D propose to add a level : marbled					
43.	**VG**	**Seed: veining**	**Grain: veinure**	**Samen: Aderung**			
QN		weak	faible	gering		Prelude(D), Ryco(D)	3
		medium	moyenne	mittel		Loma(D)	5
		strong	forte	stark		Daisy(D), Flo(D)	7
44. **(*)**	**VG**	**Seed: color of hilar ring**	**Grain: couleur du cerne hilaire**	**Samen: Farbe der Nabel umrandung**			
QL		same color as seed	même couleur que le grain	gleiche Farbe wie Samen			1
		not same color as seed	différente de celle du grain	andere Farbe als der Samen			2

		English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo (1)	Note/ Nota
45. (*)	**MS**	**Time of flowering (50% of the plants with at least one flower)**	**Epoque de floraison (50% des plantes avec au moins une fleur)**	**Zeitpunkt der Blüte (50% der Pflanzen zeigen wenigstens eine Blüte)**			
QN		very early	très précoce	sehr früh		Pfälzer Juni(D)	1
		early	précoce	früh		Fortissima(C), Perle von Marbach(C), Prelude(D)	3
		medium	moyenne	mittel		Fanion(D), Groffy (D), Hilda(C), Precores(C)	5
		late	tardive	spät		Necores(C)	7
		very late	très tardive	sehr spät			9
				CZ propose QN/VG			
46. (+)		**Resistance to Bean anthracnose (<u>Colletotrichum lindemuthianum</u>)**	**Résistance à l'anthracnose du Haricot (<u>Colletotrichum lindemuthianum</u>)**	**Resistenz gegen Brennflecken krankheit (<u>Colletotrichum lindemuthianum</u>)**			
46.1	**VG**	**Race Lambda**	**Pathotype Lambda**	**Pathotyp Lambda**			
QL		absent	absente	fehlend		Daisy(D), Tuf(D)	1
		present	présente	vorhanden		Belfin(D), Label(D), Reskia(D)	9
46.2	**VG**						
QL		**Race Kappa**	**Pathotype Kappa**	**Pathotyp Kappa**			
46.2		absent	absente	fehlend		Belfin(D), Label(D)	1
		present	présente	vorhanden		Reskia(D	9

		English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo (1)	Note/ Nota
47. **(+)**	**VG**	**Resistance to Bean Common Mosaic Virus(BCMV)**	**Résistance au virus de la mosaïque commune du Haricot (BCMV)**	**Resistenz gegen Gewöhnliches BohnenmosaikVirus (BCMV)**			
QL		not resistant to mosaic, no blackroot development	non résistant à la mosaïque, pas de développement du blackroot	nicht resistent gegen Bohnenmosaik, keine Entwicklung von Schwarzbeinigkeit		Michelite(D), Rapier(D),Spinel(C)	1
		Resistant to mosaic, but developing blackroot	Résistant à la mosaïque, mais développant le blackroot	Resistent gegen Bohnenmosaik, aber entwickelnd Schwarzbeinigkeit		Arena(D), Masai(D), Odessa(D), Topcrop(D)	2
		resistant to mosaic and no blackroot development	résistant à la mosaïque et pas de développement du blackroot	resistent gegen Bohnenmosaik, und keine Entwicklung von Schwarzbeinigkeit		Felspar(C), Great Northern 31	3
48. **(+)**		**Resistance to Halo Blight (<u>Pseudomonas syringae</u> pv. <u>phaseolicola</u>)**	**Résistance à la graisse à halo (<u>Pseudomonas syringae</u> pv. <u>phaseolicola</u>)**	**Resistenz gegen Fettflecken-krankheit (<u>Pseudomonas syringae</u> pv. <u>phaseolicola</u>)**			
48.1	VG	US Race 1	**US Pathotype 1**	**US Pathotyp 1**			
QN		absent	absente	fehlend		Amboy(D), Michelite(D)	1
		present	présente	vorhanden		RM UI-3(D), RM UI-34(D), Forum(D), Masai(D)	9
48.2	**VG**	**US Race 2**	**US Pathotype 2**	**US Pathotyp 2**			
QN		absent	absente	fehlend		RM UI-3(D), RM UI-34(D)	1
		present	présente	vorhanden		Forum(D), Masai(D)	9
49. **(+)**	**VG**	**Resistance to Common Blight (<u>Xanthomonas campestris</u> pv. <u>phaseoli</u>), Isolate 422**	**Résistance à la graisse commune (<u>Xanthomonas campestris</u> pv. <u>phaseoli</u>), Isolate 422**	**Resistenz gegen Bohnen- brand (<u>Xanthomonas campestris</u> pv. <u>phaseoli</u>), Isolat 422**			
QN		absent	absente	fehlend		Echo(D), Keygold(D)	
		present	présente	vorhanden		Walley (US line)	

8. Explanations on the Table of Characteristics

8.1 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) Leaf: All observations on the leaf should be made at the time of full flowering.
(b) Pod: All observations on the pod should be made at the time of fresh market maturity.
(c) Seed: All observations on the seed should be made on dry seed harvested from the plots

8.2 Explanations for individual characteristics

Ad. 20: Pod: ratio transverse width/median width

3.	5.	7.
small	medium	large

Ad. 21 and 22: Pod: ground color (21) and intensity (22

	yellow	green	violet
light	Frühe dickfleischige Wachs (D), Goldmarie (C), Erato (D)	Fortissima (C), Rabl (D), Ragalla (D), Ryco (D)	
medium	Gabriella(D), Filetty (D), Goldelfe (C), Goldfish (D)	Purpiat (D), Prelude (D), Tuf (D)	
dark	Golddukat (D)	Decibel (D), Diva (D), Vilbel (D), Verona (D)	Blauhilde (C), Purple Teepee (D)

Ad. 27: Pod: degree of curvature

1	3	5	7	9
absent or very slight	slight	medium	strong	very strong

Ad. 28: Pod: shape of curvature

1	2	3
concave	s-shaped	convex

Ad. 29: Pod: shape of distal part (excluding beak)

3	5	7
acute	acute to truncate	truncate

Ad. 34: Seed Weight

The seed weight should be measured on four samples of 100 seeds.

Ad. 35, 37 and 38: Seed: explanation of sections and sizes

Ad. 35: Seed: shape of median longitudinal section

1	2	3	4
circular	circular to elliptic	elliptic	kidney-shaped

Ad. 41 and 42: Seed: color and distribution of predominant secondary color

The predominant secondary color is the color with the second largest area. If several secondary colors exist, the competent authorities will add one or more characteristics as necessary.

Ad. 46: Resistance to Bean anthracnose (Colletotrichum lindemuthianum)

Maintenance of races	In a test tube on glucose-peptone agar
Pre-germination of seed (about 4 to 5 days)	At least twice, 10 seeds are placed at 20°C in petri-dishes on humid vermiculite. After commencement of germination (1 to 2 cm root length) the seed coat is removed.
Inoculum and inoculation	Growth on GPA in 1 l. glass bottles for 12 to 14 days. Removal of inoculum with a scraper. The germinated seeds are dipped in a suspension of spores of Colletotrichum lindemuthianum for 2 min. The concentration of spores should be 1 million spores per ml
Sowing:	Sowing in pots with sand, covering of seed with sand to 1 cm.
Culture of plants:	The pots are placed in a Phytotron at 20°C with 16 hours of daylight. Regular watering is needed, no special air humidity requirements.
Observation:	The symptoms are visible during sprouting of the plants or up to 10 days thereafter. The observations can be made after 10 to 14 days.
Scheme of observation:	Resistance present: healthy plants with no symptoms, or weak reaction with small superficial necroses in the form of dots or stripes Resistance absent: reaction with up to 5 necrotic flecks on stem, or strong reaction with necroses larger than 3 mm, sunk deeply into the tissue, or dying plants with strong formation of necroses during sprouting or thereafter.

Ad. 47: Resistance to Bean Common Mosaic Virus (BCMV))

Production of Infection Material	
Nature of medium:	Plant or dry leaves
Special conditions:	Glasshouse culture (= plants) or deep-frozen leaves
Identification:	Use of virus strain “NL 3”
Conduct of Trials	
Plant stage:	Two-leaf
Temperature:	Culture at 20 to 25°C, following inoculation 30°C for a period of 8 days
Light:	Normal daylight, if necessary shaded
Culture:	Glasshouse
Type of inoculation:	Mechanical, by rubbing the inoculum on the leaves
Duration of Trials	
- Sowing to inoculation:	8 to 9 days
- Inoculation to observation:	6 to 21 days
Number of plants tested:	60 (20 pots with 3 plants each)
Description of the Method	

(1) Obtention of the Inoculation Material.- The virus strain "NL 3" is used for the tolerance testing since it covers practically all the groups of strains of Bean Common Mosaic Virus. To begin with, dwarf bean plants of the variety "Dufrix" or of another variety highly sensitive to the virus are infected, around the beginning of April, by rubbing with pressed juice containing the virus, obtained from own maintenance culture or from freeze-dried leaves (provided for instance by the Institute for Biochemistry and Virus Diseases of the Federal Biological Institute in Brunswick (= strain "NL 3")). These infected plants are then used, at the beginning of June, for producing pressed juice containing the virus with which the test plants are inoculated.

(2) Inoculation.- The pressed juice containing the virus is diluted for inoculation (approximately one part juice to two parts water). After the two leaves have been strewn with carborundum or celite, the diluted juice is lightly rubbed on using a firm sponge. The leaves are then rinsed with water some 15 to 20 minutes later (watering can with a fine spout).

(3) Incubation.- Following inoculation, the air temperature in the glasshouse must be kept at 30°C for at least one week. (Important!!! The temperature must be maintained throughout the day and also at night). First lesions may already occur after 3 to 4 days. Top necrosis will become visible one week already after inoculation. Varieties with tolerance absent demonstrate the typical symptoms (= mosaic) after approximately two weeks. The final observations can be made some three weeks after inoculation.

(4) Observation: The first assessment should be made on the sixth day following the day of innoculation. The mosaic symptoms and the necrotic symptoms can be distinguished as follows:

i) Mosaic symptoms: pale-colored leaves; light and dark green mosaic; dark green areas between veins blistered; narrow chlorotic bands along veins and leaf margin rolling downwards. Various symptoms may be expressed in various degrees. The mosaic symptoms may be recorded using a scale from 1 to 9 to assess the reaction of the candidate variety (1 = no symptoms, 9 = strongest stage of expression). If a candidate variety does not show any mosaic symptoms, while the susceptible standard varieties do so, that candidate variety should be regarded as being resistant to mosaic.

(ii) Blackroot symptoms: there are two types of necrosis (especially when tested with strain "NL3"), which are to be classified as "Blackroot."

Local necrosis (local hypersensitivity): characterized by brown necrotic netting (the veins) localized on a part of the leaf blade;

Systemic necrosis (top necrosis): characterized by a fast development of necrosis through- out the stem, the petiole and the roots resulting in top necrosis or even complete necrosis of the plant. (The vascular bundles of the stem, the petiole and finally the roots, if innoculated at a young plant stage, turn brown (therefore called "Blackroot")).

Varieties or strains showing blackroot symptoms (both local hypersensitivity and top necro- sis) generally prove to be resistant to mosaic in the field.

During the resistance testing most local necroses develop into top necroses.

Remarks:

The genetics of resistance to Bean Common Mosaic Virus (BCMV) and/or Blackroot is based on a number of a-specific and specific recessive genes of which some are allelic. Drijfhout found at least 4 genes; e.g.:

bc-u, bc-1/bc-1^2, bc-2/bc-2^2 and bc-3

A dominant necrosis gene 'I' interferes with these resistance genes. The recessive form 'I^+' in combination with bc-3 and bc-2^2 gives complete resistance to both BCMV and Blackroot (Example variety: Great Northern 31).

(for more details, see Drijfhout (1978))

Ad. 48: Resistance to Halo Blight (Pseudomonas syringae pv. phaseolicola)

Maintenance of strains	
Type of medium	Infected, dry leaves
Identification:	On the basis of preliminary trials, the European strains (which probably belong to the African race- by J.D. Taylor, H.R.I. Wellesbourne) have a higher level of virulence than the US race 1 and race 2. The aggressivity of the pathogen is measured by the spot size of the pod of sensitive varieties. The isolates used for the test should cause a grease spot with a minimum diameter of 3 mm.
Execution of test	
Growth stage of plants:	The first and second trifoliate leaves of 2 to 3 cm length
Temperature:	Day: 24°C; night: 18°C
Humidity:	100% relative humidity until inoculated leaves are fully developed
Growing method:	In the glasshouse
Inoculum:	Bacterial suspension with a concentration of 10^8 bacterial cells/ml.
Method of inoculation	Mechanical, using a camel-hair brush
Duration of test	
- from inoculation to reading:	Until infected leaves are fully developed
Number of plants tested:	10-20 plants
Multiplication/propagation of bacteria:	Bouillon-Agar (2 g Na_2 HPO_4, 2 g NaH_2PO_4, 3 g NaCl, 25 g Bouillon-Agar/1000 ml distilled water)
Remarks:	- Leaf reaction is very commonly studied nowadays. The reaction of the pod is of polygenic

character, and there is no genetic linkage between leaf and pod reaction. There are as yet no varieties with pod resistance.
- Resistance means genetically that this host has the recessive gene with or without the presence of the modifiers; in the case where the modifiers are present the sources of these genes are: PI 150 414 (USA), CNRA-HW5A (Fr.).
It is possible to evaluate the lesions at the stage of the fully developed leaf. The different types of symptom are shown below.

Legend of illustration following hereafter

Scheme of observation

Resistance absent

Resistance present

Ad. 49: Resistance to Common Blight (Xanthomonas campestris pv. phaseoli), Isolate 422

Maintenance of races	
Type of medium:	Infected, dry leaves
Execution of test	
Growth stage of plants:	The first and second trifoliate leaves of 2 to 3 cm length
Temperature:	Day: 26°C; night: 20°C
Humidity:	100% relative humidity during and 1 to 2 days after inoculation, thereafter normal relative humidity
Growing method:	In the glasshouse
Inoculum:	Bacterial suspension with a concentration of 10^8 bacterial cells/ml.
Method of inoculation	Mechanical, using a camel-hair brush
Duration of test	
- from inoculation to reading:	Until infected leaves are fully developed
Number of plants tested:	10-20 plants
Multiplication/propagation of bacteria:	20 g extract of yeast powder, 20 g glucose, 20 g $CaCO_3$, 20 g agar-agar/1000 ml distilled water)
Remarks:	- Isolate 422 can be obtained from the Vegetable Research Institute, 1775 Budapest, P.O.Box 95, Hungary. - The reaction of pods to X. phaseoli is not yetclear enough today.

Legend of illustration following hereafter

Scheme of observation

Resistance absent

Resistance present

9. Literature

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8. Technical Questionnaire

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:

	Application date: (not to be filled in by the applicant)

TECHNICAL QUESTIONNAIRE
to be completed in connection with an application for plant breeders' rights

In the case of hybrid varieties which are the subject of an application for plant breeders' rights, and where the parent lines are to be submitted as a part of the examination of the hybrid variety, this Technical Questionnaire should be completed for each of the parent lines, in addition to being completed for the hybrid variety.

1. Subject of the Technical Questionnaire

1.1 Botanical name	*Phaseolus vulgaris* L.
1.2 Common Name	French Bean

2. Applicant

Name	
Address	
Telephone No.	
Fax No.	
E-mail address	
Breeder (if different from applicant)	

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:

3. Proposed denomination and breeder's reference

Proposed denomination (if available) [ ]

Breeder's reference [ ]

[#]4. Information on the breeding scheme and propagation of the variety

4.1 Breeding scheme

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(i) Variety resulting from:

4.1.1 Crossing

(a) controlled cross [ ]
(please state parent varieties)
(b) partially known cross [ ]
(please state known parent variety(ies))
(c) unknown cross [ ]

4.1.2 Mutation [ ]
(please state parent variety)

4.1.3 Discovery and development [ ]
(please state where and when discovered and how developed)

4.1.4 Other [ ]
(please provide details)

.....

4.2 Method of propagating the variety (pro domo: see GN 31 and GN 32)

[#] Authorities may allow certain of this information to be provided in a confidential section of the Technical Questionnaire.

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:

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

	Characteristics	Example Varieties	Note
5.1 (2)	**Plant: growth type**		
	dwarf	Callide(D), Capitole(D)	1[ ]
	climbing	Phenomene(C), Bacle(C)	2[ ]
5.2 (17.1)	**<u>Dwarf beans only</u>: Pod: length (including beak)**		
	very short		1[ ]
	short	Prelude(D), Tuf(D)	3[ ]
	medium	Amity(D), Lusia(D)	5[ ]
	long	Dubra(D), Loma(D)	7[ ]
	very long	Daisy(D), Longking(D), Maja(D)	9[ ]
(17.2)	**<u>Climbing beans only</u>: Pod: length (as for 17.1)**		
	very short		1[ ]
	short	Juwagold(C)	3[ ]
	medium		5[ ]
	long	Fidel(C)	7[ ]
	very long	Toplong(C	9[ ]
5.3 (19)	**Pod: shape of cross section (through seed)**		
	narrow elliptic		1[ ]
	elliptic to ovate	Pascal(D), Pfälzer Juni(D), Regulex(D)	2[ ]
	cordate		3[ ]
	circular	Tuf(D)	4[ ]
	“eight shaped”	Tendercrop White Seeded(D)	5[ ]

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:

	Characteristics	Example Varieties	Note
5.4 (21)	**Pod: ground color**		
	yellow	Goldmarie(C), Gold fish(D), Golddukat(D)	1[ ]
	green	Fortissima(C), Filetty(D), Diva(D)	2[ ]
	violet	Purpiat(D), Purple Teepee(D)	3[ ]
5.5 (26)	**Pod: stringiness**		
	absent	Cabri(D), Tuf(D)	1[ ]
	present	Facta(D), Marbel(D)	9[ ]
5.6 (39)	**Seed: number of colors**		
	one		1[ ]
	two		2[ ]
	more than two		3[ ]
5.7 (40)	**Seed: main color(largest area)**		
	white	Goldfish(D), Tuf(D)	1[ ]
	green or greenish	Muriel(D), Pascal(D)	2[ ]
	grey		3[ ]
	yellow	Gele Citroen(D)	4[ ]
	buff colored	Blauhilde(C), Purple Teepee(D)	5[ ]
	brown	Primel(D), Sunray(D)	6[ ]
	red	Flageolet rouge(D)	7[ ]
	violet		8[ ]
	black	Delinel(D), Vilbel(D)	9[ ]

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:

	Characteristics	Example Varieties	Note
5.8 (45)	**Time of flowering (50% of the plants with at least one flower)**		
	very early	Pfälzer Juni(D)	1[ ]
	early	Fortissima(C), Perle von Marbach(C), Prelude(D)	3[ ]
	medium	Fanion(D), Groffy (D), Hilda(C), Precores(C)	5[ ]
	late	Necores(C)	7[ ]
	very late		9[ ]

6. Similar varieties and differences from these varieties

Please use the following table and box for comments to provide information on how your candidate variety differs from the variety (or varieties) which, to the best of your knowledge, is (or are) most similar. This information may help the examination authority to conduct its examination of distinctness in a more efficient way.

Denomination(s) of variety(ies) similar to your candidate variety	Characteristic(s) in which your candidate variety differs from the similar variety(ies)	Describe the expression of the characteristic(s) for the **similar** variety(ies)	Describe the expression of the characteristic(s) for **your** candidate variety
Example			

Comments:

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:

[#]7. Additional information which may help in the examination of the variety

7.1 In addition to the information provided in sections 5 and 6, are there any additional characteristics which may help to distinguish the variety?

Yes [ ] No [ ]

(If yes, please provide details)

7.2 Are there any special conditions for growing the variety or conducting the examination?

Yes [ ] No [ ]

(If yes, please provide details)

7.3 Other information

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A representative color photograph of the variety should accompany 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 (b) is yes, please attach a copy of the authorization.

[#] Authorities may allow certain of this information to be provided in a confidential section of the Technical Questionnaire.

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:

9. Information on plant material to be examined or submitted for examination.

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, pesticide) Yes [ ] No [ ]

(c) Tissue culture Yes [ ] No [ ]

(d) Other factors Yes [ ] No [ ]

Please provide details of where you have indicated “yes”.

……

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9.3 Has the plant material to be examined been tested for the presence of virus or other pathogens?

Yes [ ]

(please provide details as specified by the Authority)

No [ ]

10. I hereby declare that, to the best of my knowledge, the information provided in this form is correct:

Applicant’s name

Signature Date

[End of document]