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INTERNATIONAL UNION FOR THE PROTECTION OF NEW VARIETIES OF PLANTS

Geneva

DRAFT

FIELD BEAN*

UPOV Code(s):

VICIA_FAB_MIN

Vicia faba L. var. *equina* St.-Amans

GUIDELINES

FOR THE CONDUCT OF TESTS

FOR DISTINCTNESS, UNIFORMITY AND STABILITY

prepared by experts from United Kingdom
to be considered by the
Enlarged Editorial Committee
at its meeting, to be held in Geneva
from 2018-03-26 to 2018-03-27

Disclaimer: this document does not represent UPOV policies or guidance

Alternative names:*

Botanical name	*English*	*French*	*German*	*Spanish*
Vicia faba L. var. *equina* St.-Amans, *Vicia faba* subsp. *equina* (Pers.) Schübl. & G. Martens, *Vicia faba* var. *minor* Peterm.	Field Bean, Tick Bean, Faba Bean, Horse Bean	Féverole, Fève à cheval	Ackerbohne, Pferdebohne	Haba, Haboncillo, Haba cabalar

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.

ASSOCIATED DOCUMENTS

These Test Guidelines should be read in conjunction with the General Introduction and its associated TGP documents.

* 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.]

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1. Subject of these Test Guidelines

These Test Guidelines apply to all varieties of *Vicia faba* L. var. *equina* St.-Amans.

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:

3 kg or 6000 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 optimum stage of development for the assessment of each characteristic is indicated by a number in the Table of Characteristics. The stages of development denoted by each number are described in Chapter 8.

3.4 Test Design

3.4.1 Each test should be designed to result in a total of at least 160 plants, which should be divided between at least 2 replicates.

3.4.2 The design of the tests should be such that plants or parts of plants may be removed for measurement or counting without prejudice to the observations which must be made up to the end of the growing cycle.

3.5 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.

4.1.4 Number of Plants or Parts of Plants to be Examined

Unless otherwise indicated, for the purposes of distinctness, all observations on single plants should be made on 60 plants or parts of plants taken from each of 60 plants and any other observations made on all plants in the test, disregarding any off-type plants.

In the case of observations of parts taken from single plants, the number of parts to be taken from each of the plants should be 1.

4.1.5 Method of Observation

The recommended method of observing the characteristic for the purposes of distinctness is indicated by the following key in the Table of Characteristics (see document TGP/9 “Examining Distinctness”, Section 4 “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

Type of observation: visual (V) or measurement (M)

“Visual” observation (V) is an observation made on the basis of the expert’s judgment. For the purposes of this document, “visual” observation refers to the sensory observations of the experts and, therefore, also includes smell, taste and touch. Visual observation includes observations where the expert uses reference points (e.g. diagrams, example varieties, side-by-side comparison) or non-linear charts (e.g. color charts). Measurement (M) is an objective observation against a calibrated, linear scale e.g. using a ruler, weighing scales, colorimeter, dates, counts, etc.

Type of record: for a group of plants (G) or for single, individual plants (S)

For the purposes of distinctness, observations may be recorded as a single record for a group of plants or parts of plants (G), or may be recorded as records for a number of single, individual plants or parts of plants (S). In most cases, “G” provides a single record per variety and it is not possible or necessary to apply statistical methods in a plant-by-plant analysis for the assessment of distinctness.

In cases where more than one method of observing the characteristic is indicated in the Table of Characteristics (e.g. VG/MG), guidance on selecting an appropriate method is provided in document TGP/9, Section 4.2.

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 These Test Guidelines have been developed for the examination of seed-propagated varieties. For varieties with other types of propagation, the recommendations in the General Introduction and document TGP/13 "Guidance for new types and species" Section 4.5 "Testing Uniformity" should be followed.

4.2.3 The assessment of uniformity should be according to the recommendations for cross-pollinated varieties in the General Introduction.

4.2.4 In the case of visual observation, uniformity is assessed on the basis of off-types. In the case of measurements, uniformity should be assessed using an appropriate statistical method.

4.2.5 For the assessment of uniformity of seed-propagated varieties, a population standard of 2% and an acceptance probability of at least 95% should be applied. In the case of a sample size of 160 plants, 6 off-types are allowed.

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 further examined by testing a new seed stock to ensure that it exhibits the same characteristics as those shown by the initial 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) Wing: melanin spot (characteristic 4)
(b) Plant: growth type (characteristic 14)
(c) Seed: black pigmentation of hilum (characteristic 22)

5.4 Guidance for the use of grouping characteristics, in the process of examining distinctness, is provided through the General Introduction and document TGP/9 “Examining Distinctness”.

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

6.2.1 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.

6.2.2 In the case of qualitative and pseudo-qualitative characteristics (see Chapter 6.3), all relevant states of expression are presented in the characteristic. However, in the case of quantitative characteristics with 5 or more states, an abbreviated scale may be used to minimize the size of the Table of Characteristics. For example, in the case of a quantitative characteristic with 9 states, the presentation of states of expression in the Test Guidelines may be abbreviated as follows:

State	*Note*
small	3
medium	5
large	7

However, it should be noted that all of the following 9 states of expression exist to describe varieties and should be used as appropriate:

State	*Note*
very small	1
very small to small	2
small	3
small to medium	4
medium	5
medium to large	6
large	7
large to very large	8
very large	9

6.2.3 Further explanation of the presentation of states of expression and notes is provided in document TGP/7 “Development of Test Guidelines”.

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

	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
1 2	**3 4**	**5 6**	**7**			
	Name of characteristics in English	**Nom du caractère en français**	**Name des Merkmals auf Deutsch**	**Nombre del carácter en español**		
	states of expression	types d’expression	Ausprägungsstufen	tipos de expresión		

1 Characteristic number

2 (*) Asterisked characteristic – see Chapter 6.1.2

3 Type of expression
QL Qualitative characteristic – see Chapter 6.3
QN Quantitative characteristic – see Chapter 6.3
PQ Pseudo-qualitative characteristic – see Chapter 6.3

4 Method of observation (and type of plot, if applicable)
MG, MS, VG, VS – see Chapter 4.1.5

5 (+) See Explanations on the Table of Characteristics in Chapter 8.2

6 (a)-(c) See Explanations on the Table of Characteristics in Chapter 8.1

7 Growth stage key See Explanations on the Table of Characteristics in Chapter 8

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

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
1.		**QN VG**		**19-61**			
		Foliage: intensity of green color	**Feuillage : intensité de la couleur verte**	**Laub: Intensität der Grünfärbung**	**Follaje: intensidad del color verde**		
		light	claire	hell	claro	Griffin	1
		medium	moyenne	mittel	medio	Babylon, Wizard	3
		dark	foncée	dunkel	oscuro	Maris Bead	5
2.		**QL VG**		**19-61**			
		Foliage: greyish hue of green color	**Feuillage : nuance grisâtre de la couleur verte**	**Laub: gräulicher Ton der Grünfärbung**	**Follaje: tono grisáceo del color verde**		
		absent	absente	fehlend	ausente	Trumpet, Tundra	1
		present	présente	vorhanden	presente	Espresso, Maris Bead	9
3.	**(*)**	**QN MG/MS**	**(+)**				
		Time of flowering	**Époque de floraison**	**Blühzeitpunkt**	**Época de floración**		
		very early	très précoce	sehr früh	muy temprana	Louhi, Sampo	1
		early	précoce	früh	temprana	Boxer, Fuego	3
		medium	moyenne	mittel	media	Babylon, Obelisk, Tundra	5
		late	tardive	spät	tardía	Banquise, Griffin	7
		very late	très tardive	sehr spät	muy tardía	Hiverna	9
4.	**(*)**	**QL VG**	**(a)**	**61-65**			
		Wing: melanin spot	**Aile : tâche de mélanine**	**Flügel: Melaninfleck**	**Ala: mancha de melanina**		
		absent	absente	fehlend	ausente	Banquise	1
		present	présente	vorhanden	presente	Trumpet	9

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
5.	**(*)**	**PQ VG**	**(a)**	**61-65**			
		Wing: color of melanin spot	**Aile : couleur de la tâche de mélanine**	**Flügel: Farbe des Melaninflecks**	**Ala: color de la mancha de melanina**		
		yellow	jaune	gelb	amarillo		1
		brown	brun	braun	marrón		2
		black	noir	schwarz	negro	Trumpet, Wizard	3
6.		**QN VG**	**(+) (a), (b)**	**61-65**			
		<u>Only varieties with Wing: melanin spot: present</u>: Standard: extent of anthocyanin coloration	**<u>Seulement les variétés avec Aile : tâche de mélanine : présente</u>: Étendard : étendue de la pigmentation anthocyanique**	**<u>Nur Sorten mit Flügel: Melaninfleck: vorhanden</u>: Fahne: Ausdehnung der Anthocyanfärbung**	**<u>Solo variedades con Ala: mancha de melanina: presente</u>: Estandarte: extensión de la pigmentación antociánica**		
		small	petite	klein	pequeña	Fuego	1
		medium	moyenne	mittel	media	Scoop	3
		large	grande	groß	grande	Tiffany	5
7.		**QN VG**	**(a), (b)**	**61-65**			
		<u>Only varieties with Wing: melanin spot: present</u>: Standard: intensity of anthocyanin	**<u>Seulement les variétés avec Aile : tâche de mélanine : présente</u>: Étendard : intensité de la pigmentation anthocyanique**	**<u>Nur Sorten mit Flügel: Melaninfleck: vorhanden</u>: Fahne: Intensität der Anthocyanfärbung**	**<u>Solo variedades con Ala: mancha de melanina: presente</u>: Estandarte: intensidad de la antocianina**		
		weak	faible	schwach	leve	Boxer	1
		medium	moyenne	mittel	media	Lynx	2
		strong	forte	stark	intensa	Maris Bead	3
8.		**QN MS**	**(+) (a), (b)**	**61-65**			
		Flower: length	**Fleur : longueur**	**Blüte: Länge**	**Flor: longitud**		
		short	courte	kurz	corta	Espresso, Maris Bead	3
		medium	moyenne	mittel	media	Fuego, Tundra, Vertigo	5
		long	longue	lang	larga	Babylon, Fury	7

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
9.		**QN MS/VG**	**(+) (a), (b)**	**61-65**			
		Standard: width	**Étendard : largeur**	**Fahne: Breite**	**Estandarte: anchura**		
		narrow	étroit	schmal	estrecho	Laura	1
		narrow to medium	étroit à moyen	schmal bis mittel	estrecho a medio	Fuego	2
		medium	moyen	mittel	medio	Fabelle	3
		medium to broad	moyen à large	mittel bis breit	medio a ancho	Wizard	4
		broad	large	breit	ancho	Trumpet	5
10.		**QN MS/VG**	**(+) (a), (b)**	**61-65**			
		Standard: ratio flower length/standard width	**Étendard : rapport longueur de la fleur/largeur de l'étendard**	**Fahne: Verhältnis Blütenlänge/Fahnenbreite**	**Estandarte: relación longitud de la flor/anchura del estandarte**		
		low	bas	klein	baja	Lynx	1
		medium	moyen	mittel	media	Fuego	3
		high	élevé	groß	alta	Babylon	5
11.	**(*)**	**QN MS**		**(c)**	**61-65**		
		Leaflet: length	**Foliole : longueur**	**Blattfieder: Länge**	**Folíolo: longitud**		
		short	court	kurz	corto	Maris Bead, Sampo	3
		medium	moyen	mittel	medio	Espresso, Trumpet	5
		long	long	lang	largo	Honey, Isabell, Maya	7
12.	**(*)**	**QN MS**		**(c)**	**61-65**		
		Leaflet: width	**Foliole : largeur**	**Blattfieder: Breite**	**Folíolo: anchura**		
		narrow	étroit	schmal	estrecho	Bumble, Maris Bead	3
		medium	moyen	mittel	medio	Espresso, Fury	5
		broad	large	breit	ancho	Honey, Isabell	7

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
13.		**QN VG**		**61-69**			
		Only varieties with Wing: melanin spot: present: Stem: anthocyanin coloration	**Seulement les variétés avec Aile : tâche de mélanine : présente: Tige : pigmentation anthocyanique**	**Nur Sorten mit Flügel: Melaninfleck: vorhanden: Trieb: Anthocyanfärbung**	**Solo variedades con Ala: mancha de melanina: presente: Tallo: pigmentación antociánica**		
		absent to weak	absente à faible	fehlend bis schwach	ausente o leve	Trumpet	1
		medium	moyenne	mittel	media	Pyramid, Scoop, Wizard	3
		strong	forte	stark	intensa	Griffin, Louhi	5
14.	**(*)**	**QL VG**	**(+)**	**71-81**			
		Plant: growth type	**Plante : type de croissance**	**Pflanze: Wuchsform**	**Planta: hábito de crecimiento**		
		determinate	déterminée	begrenzt wachsend	determinado	Titus	1
		indeterminate	indéterminée	unbegrenzt wachsend	indeterminado	Wizard	2
15.	**(*)**	**QN MG/MS**		**71-81**			
		Plant: length	**Plante : longueur**	**Pflanze: Länge**	**Planta: longitud**		
		short	courte	kurz	corta	Louhi	3
		medium	moyenne	mittel	media	Fuego, Obelisk	5
		long	longue	lang	larga	Bumble, Olan	7
16.		**QN MS**	**(+)**	**71-81**			
		Stem: number of nodes	**Tige : nombre de nœuds**	**Trieb: Anzahl Knoten**	**Tallo: número de nudos**		
		few	faible	wenige	bajo	Louhi	3
		medium	moyen	mittel	medio	Isabell	5
		many	grand	viele	alto	Hiverna, Tundra	7
17.	**(*)**	**QN MS/VG**	**(+) (b)**	**71-80**			
		Pod: length	**Gousse : longueur**	**Hülse: Länge**	**Vaina: longitud**		
		short	courte	kurz	corta	Divine, Fury	3
		medium	moyenne	mittel	media	Fanfare, Griffin	5
		long	longue	lang	larga	Babylon, Wizard	7

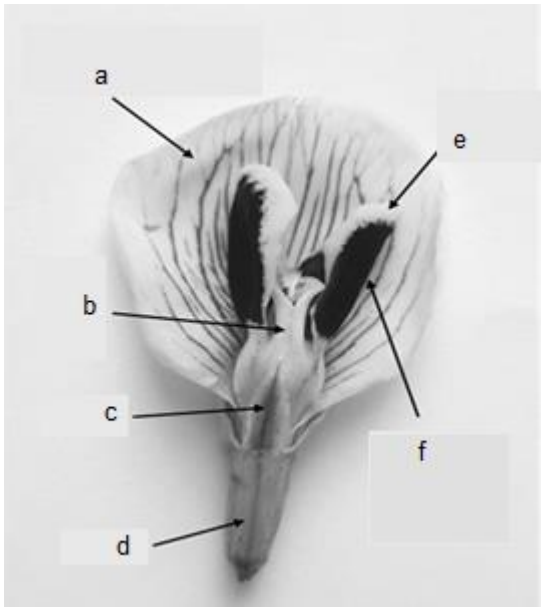
		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
18.		**QN MS/VG**	**(+) (b)**	**71-80**			
		Pod: width	**Gousse : largeur**	**Hülse: Breite**	**Vaina: anchura**		
		narrow	étroite	schmal	estrecha	Kontu	3
		medium	moyenne	mittel	media	Scoop	5
		broad	large	breit	ancha	Bumble, Clipper	7
19.		**QN VG**	**(b)**	**71-80**			
		Pod: intensity of green color	**Gousse : intensité de la couleur verte**	**Hülse: Intensität der Grünfärbung**	**Vaina: intensidad del color verde**		
		light	claire	hell	claro	Volantin	1
		medium	moyenne	mittel	medio	Palacio	2
		dark	foncée	dunkel	oscuro	Tiffany, Vitabon	3
20.	**(*)**	**QL VG**	**(+)**	**89**			
		Seed: shape	**Graine : forme**	**Samen: Form**	**Semilla: forma**		
		circular	circulaire	kreisförmig	circular	Maris Bead	1
		non-circular	non-circulaire	nicht kreisförmig	no circular	Bumble, Fury	2
21.	**(*)**	**PQ VG**	**(+)**	**89**			
		Seed: color of testa	**Graine : couleur du tégument**	**Samen: Farbe der Samenschale**	**Semilla: color de la testa**		
		light yellow brown	brun-jaune clair	hellgelbbraun	marrón amarillento claro	Trumpet, Wizard	1
		grey	gris	grau	gris	Organdi, Taifun	2
		green	vert	grün	verde		3
		black	noir	schwarz	negro		4
22.	**(*)**	**QL VG**		**89**			
		Seed: black pigmentation of hilum	**Graine : pigmentation noire du hile**	**Samen: schwarze Pigmentierung des Nabels**	**Semilla: pigmentación negra del hilio**		
		absent	absente	fehlend	ausente	Fuego, Trumpet	1
		present	présente	vorhanden	presente	Clipper, Maris Bead	9
23.	**(*)**	**QN MG**		**89**			
		100 seed weight	**poids de 100 graines**	**Hundertkorngewicht**	**peso de 100 semillas**		
		very low	très faible	sehr niedrig	muy bajo	Kontu, Sampo	1
		low	faible	niedrig	bajo	Diana, Louhi	3
		medium	moyen	mittel	medio	Babylon, Fury	5
		high	élevé	hoch	alto		7
		very high	très élevé	sehr hoch	muy alto	Bumble, Clipper	9

8. Explanations on the Table of Characteristics

8.1 Explanations covering several characteristics

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

(a)



a = Standard petal
b = Keel petal
c = Sepal
d = Calyx
e = Wing petal
f = Wing melanin spot

(b) Observations should be made at the second flowering node.

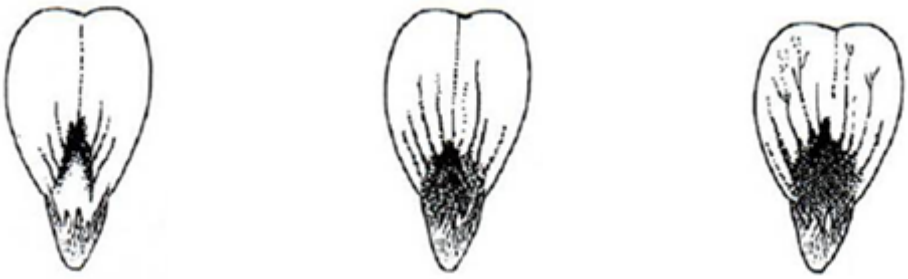
(c) Measurements should be made on the basal pair of leaflets of the leaf at the second flowering node. If there is any difference in size between the pairs of leaflets, the largest should be observed.

8.2 Explanations for individual characteristics

Ad. 3: Time of flowering

Time of flowering is reached when 50% of the plants have at least one open flower.

Ad. 6: Only varieties with Wing: melanin spot: present: Standard: extent of anthocyanin coloration



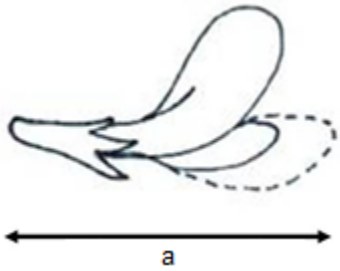
1
small

3
medium

5
large

Ad. 8: Flower: length

The standard should be flattened for assessment of the length.



a = Flower: length

Ad. 9: Standard: width

a = Standard: width

Ad. 10: Standard: ratio flower length/standard width

1
low

3
medium

5
high

Ad. 14: Plant: growth type

1
determinate

2
indeterminate

Ad. 16: Stem: number of nodes

Observations should be made up to and including the first flowering node.

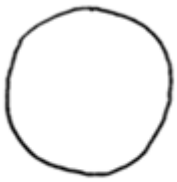
Ad. 17: Pod: length

Pod length should be assessed excluding the beak.

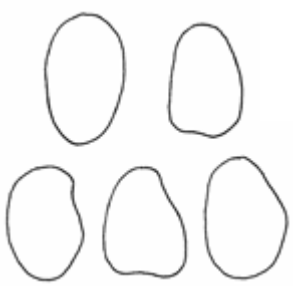
Ad. 18: Pod: width

Pod width should be assessed at the widest point from suture to suture.

Ad. 20: Seed: shape



1
circular



2
non-circular

Ad. 21: Seed: color of testa

Observation should be made immediately after harvest and before drying. Seeds that are light yellow brown become brown with age if they contain tannin.

8.3 *Phenological growth stages and BBCH-identification keys of* Vicia faba *L. (Meier, 1997)*

Code	Description
Principal growth stage 0: Germination	
00	Dry seed
01	Beginning of seed imbibition
02	–
03	Seed imbibition complete
04	–
05	Radicle emerged from seed
06	–
07	Shoot emerged from seed (plumule apparent)
08	Shoot growing towards soil surface
09	Emergence shoot emerges through soil surface
Principal growth stage 1: Leaf development[1]	
10	Pair of scale leaves visible (may be eaten or lost)
11	First leaf unfolded
12	2 leaves unfolded
13	3 leaves unfolded
14	4 leaves unfolded
15	5 leaves unfolded
16	6 leaves unfolded
17	7 leaves unfolded
18	8 leaves unfolded
19	9 or more leaves unfolded
Principal growth stage 2: Formation of side shoots	
20	No side shoots
21	Beginning of side shoot development: first side shoot detectable
22	2 side shoots detectable
23	3 side shoots detectable
24	4 side shoots detectable
25	5 side shoots detectable
26	6 side shoots detectable
27	7 side shoots detectable
28	8 side shoots detectable
29	End of side shoot development: 9 or more side shoots detectable
Principal growth stage 3: Stem elongation	
30	Beginning of stem elongation
31	One visibly extended internode[2]
32	2 visibly extended internodes
33	3 visibly extended internodes
34	4 visibly extended internodes
35	5 visibly extended internodes
36	6 visibly extended internodes
37	7 visibly extended internodes
38	8 visibly extended internodes
39	9 or more visibly extended internodes
Principal growth stage 4: -----	
Principal growth stage 5: Inflorescence emergence	
50	Flower buds present, still enclosed by leaves
51	First flower buds visible outside leaves
52	–
53	–
54	–
55	First individual flower buds visible outside leaves but still closed
56	–
57	–
58	–
59	First petals visible, many individual flower buds, still closed

[1] Stem elongation may occur earlier than stage 19; in this case continue with the principal stage 3.
[2] First internode extends from the scale leaf node to the first true leaf node.

Principal growth stage 6: Flowering

60 First flowers open
61 Flowers open on first raceme
62 –
63 Flowers open 3 racemes per plant
64 –
65 Full flowering: flowers open on 5 racemes per plant
66 –
67 Flowering declining
68 –
69 End of flowering

Principal growth stage 7: Development of fruit

70 First pods have reached final length (“flat pod”)
71 10% of pods have reached final length
72 20% of pods have reached final length
73 30% of pods have reached final length
74 40% of pods have reached final length
75 50% of pods have reached final length
76 60% of pods have reached final length
77 70% of pods have reached final length
78 80% of pods have reached final length
79 Nearly all pods have reached final length

Principal growth stage 8: Ripening

80 Beginning of ripening: seed green, filling pod cavity
81 10% of pods ripe, seeds dry and hard
82 20% of pods ripe, seeds dry and hard
83 30% of pods ripe and dark, seeds dry and hard
84 40% of pods ripe and dark, seeds dry and hard
85 50% of pods ripe and dark, seeds dry and hard
86 60% of pods ripe and dark, seeds dry and hard
87 70% of pods ripe and dark, seeds dry and hard
88 80% of pods ripe and dark, seeds dry and hard
89 Fully ripe: nearly all pods dark, seeds dry and hard

Principal growth stage 9: Senescence

90 –
91 –
92 –
93 Stems begin to darken
94 –
95 50% of stems brown or black
96 –
97 Plant dead and dry
98 –
99 Harvested product

9. Literature

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Sirks, M.J. 1931. Beiträge zu einer genotypischen Analyse der Ackerbohne (Vicia faba L.). Genetica 13, 210-631.

10. 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

1. Subject of the Technical Questionnaire

1.1	Botanical name	*Vicia faba* L. var. *equina* St.-Amans
1.2	Common name	Field Bean, Tick Bean, Faba Bean

2. Applicant

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

3. Proposed denomination and breeder's reference

Proposed denomination (if available)	
Breeder's reference	

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

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

4.1 Breeding scheme

Variety resulting from:

4.1.1 Crossing

(a) controlled cross [ ]
(please state parent varieties)

(……..……..…) x (……..……..…)

female parent male parent

(b) partially known cross [ ]
(please state known parent variety(ies))

(……..……..…) x (……..……..…)

female parent male parent

(c) unknown cross [ ]

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

4.1.3 Mutation [ ]
(please state parent variety)

4.1.4 Other [ ]
(Please provide details)

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:

4.2 Method of propagating the variety

4.2.1 Seed-propagated varieties

(a) Self-pollination [ ]
(b) Cross-pollination [ ]
(i) Synthetic variety [ ]
(ii) Population [ ]
(c) Other (please provide details) [ ]

4.2.2 Other [ ]
(Please provide details)

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 (3)	**Time of flowering**		
	very early	Louhi, Sampo	1 [ ]
	very early to early		2 [ ]
	early	Boxer, Fuego	3 [ ]
	early to medium		4 [ ]
	medium	Babylon, Obelisk, Tundra	5 [ ]
	medium to late		6 [ ]
	late	Banquise, Griffin	7 [ ]
	late to very late		8 [ ]
	very late	Hiverna	9 [ ]
5.2 (4)	**Wing: melanin spot**		
	absent	Banquise	1 [ ]
	present	Trumpet	9 [ ]
5.3 (5)	**Wing: color of melanin spot**		
	yellow		1 [ ]
	brown		2 [ ]
	black	Trumpet, Wizard	3 [ ]
5.4 (14)	**Plant: growth type**		
	determinate	Titus	1 [ ]
	indeterminate	Wizard	2 [ ]
5.5 (20)	**Seed: shape**		
	circular	Maris Bead	1 [ ]
	non-circular	Bumble, Fury	2 [ ]
5.6 (21)	**Seed: color of testa**		
	light yellow brown	Trumpet, Wizard	1 [ ]
	grey	Organdi, Taifun	2 [ ]
	green		3 [ ]
	black		4 [ ]

	Characteristics	Example Varieties	Note
5.7 (22)	**Seed: black pigmentation of hilum**		
	absent	Fuego, Trumpet	1 [ ]
	present	Clipper, Maris Bead	9 [ ]

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

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	*Time of flowering*	*early*	*late*

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

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:

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.

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 for where you have indicated “yes”.

.....

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]