



TG/BROADBEAN(proj.1)

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INTERNATIONAL UNION FOR THE PROTECTION OF NEW VARIETIES OF PLANTS

GENEVA

DRAFT

BROAD BEAN

(Vicia faba L. var. major Harz)

*

GUIDELINES

FOR THE CONDUCT OF TESTS

FOR DISTINCTNESS, UNIFORMITY AND STABILITY

Alternative Names:*

<i>Latin</i>	<i>English</i>	<i>French</i>	<i>German</i>	<i>Spanish</i>
<i>Vicia faba L. var. major Harz</i>	Broad Bean	Fève	Dicke Bohne	Haba

ASSOCIATED DOCUMENTS

These 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.

* 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 Guidelines

These Test Guidelines apply to all varieties of *Vicia fava* L. var. *major* Harz.

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:

2 kg or at least 2000 seeds.

2.4 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.

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

2.6 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 *Duration of Tests*

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

3.2 *Testing Place*

The tests should normally be conducted at one place. If any characteristics of the variety, which are relevant for the examination of DUS, cannot be seen at that place, the variety may be tested at an additional place.

3.3 *Conditions for Conducting the Examination*

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.

3.4 *Test Design*

3.4.1 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.

3.4.2 Each test should be designed to result in a total of at least 160 plants, which should be divided between two or more replicates.

3.5 *Number of Plants / Parts of Plants to be Examined*

Unless otherwise indicated, all observations on single plants should be made on 40 plants or parts taken from each of 40 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 minimum duration of tests recommended in section 3.1 reflects, in general, the need to ensure that any differences in a characteristic are sufficiently consistent.

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. The assessment of uniformity should be according to the recommendations in the General Introduction.

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 or plant 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 is 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) Wing: melanin spot (characteristic 16);
- (c) Dry seed: color of testa (immediately after harvest) (characteristic 32).

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 – see Section 6.1.2

(a)-(c) See Explanations on the Table of Characteristics in Chapter 8, Section 8.1

(+) See Explanations on the Table of Characteristics in Chapter 8, Section 8.2

¹⁾ The optimum stage of development for the assessment of each characteristic is indicated by a number in the second column. The stages of development denoted by each number are described under Chapter 8, Section 8.3.

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

Stage ¹⁾ Stade ¹⁾ Stadium ¹⁾ Estado ¹⁾	English	français	Deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
1.	00	Seed: tannin	Grain: tanin	Samen: Tannin	Semilla: tanino	
(+)		absent	absent	fehlend	ausente	Driemaal Wit 1
		present	présent	vorhanden	presente	Trio 9
2.	65-67	Plant: growth type	Plante: type de croissance	Pflanze: Wuchstyp	Planta: tipo de crecimiento	
(*)		determinate	déterminée	begrenzt wachsend	determinado	Samson, Smerf 1
		indeterminate	indéterminée	unbegrenzt wachsend	indeterminado	Driemaal Wit 2
3.	60-69	Plant: height	Plante: hauteur	Pflanze: Höhe	Planta: altura	
(*)		very short	très basse	sehr niedrig	muy baja	The Sutton 1
		short	basse	niedrig	baja	Arbo, Reina Mora 3
		medium	moyenne	mittel	media	Aquadulce Claudia 5
		tall	haute	hoch	alta	Dreadnought 7
		very tall	très haute	sehr hoch	muy alta	Imperial White Windsor 9
4.	60-69	Plant: number of stems (including tillers more than half the length of the main stem)	Plante: nombre de tiges (tiges dépassant la moitié de la longueur de la tige principale incluses)	Pflanze: Anzahl Triebe (einschließlich der Triebe mit mehr als der halben Länge des Haupttriebes)	Planta: número de tallos (incluidos los hijuelos cuya longitud sea superior a la mitad de la longitud del tallo principal)	
(*)		few	faible	gering	bajo	The Sutton 3
		medium	moyen	mittel	medio	Albinette, Arbo 5
		many	élevé	groß	alto	Reina Blanca 7

Stage ¹⁾ Stade ¹⁾ Stadium ¹⁾ Estado ¹⁾	English	français	Deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
5. 60-69	Stem: number of nodes up to and including first flowering node	Tige: nombre de nœuds jusqu'au premier nœud florifère inclus	Trieb: Anzahl Knoten bis einschließlich des ersten blühenden Knotens	Tallo: número de nudos hasta el primer nudo floral incluido		
	few	faible	gering	bajo	Driemaal Wit, Metissa	3
	medium	moyen	mittel	medio	Futura	5
	many	élevé	groß	alto		7
6. 39-69	Stem: anthocyanin coloration	Tige: pigmentation anthocyanique	Trieb: Anthocyanfärbung	Tallo: pigmentación antociánica		
	absent	absente	fehlend	ausente	Driemaal Wit, Metissa	1
	present	présente	vorhanden	presente	Futura	9
7. 39-69	Foliage: greyish hue of green color	Feuillage: teinte grisâtre de la couleur verte	Laub: gräulicher Ton der Grünfärbung	Follaje: tono grisáceo del color verde		
	(a) absent	absente	fehlend	ausente	Metissa	1
	present	présente	vorhanden	presente	Osnaweiss	9
8. 39-69	Foliage: intensity of green color	Feuillage: intensité de la couleur verte	Laub: Intensität der Grünfärbung	Follaje: intensidad del color verde		
	(a) light	claire	hell	claro	Driemaal Wit	3
	medium	moyenne	mittel	medio	Express, Futura	5
	dark	foncée	dunkel	oscuro		7
9. (*)	62-65	Leaflet: length (basal pair of leaflets)	Foliolo: longueur (paire basale de folioles)	Fiederblatt: Länge (Basisfiederblattpaar)	Folíolo: longitud (par de folíolos basales)	
	(b) short	courte	kurz	corto	Metissa	3
	medium	moyenne	mittel	medio	Superaguadulce Tézier, Futura	5
	long	longue	lang	largo	Lange Hangers, Osnabrücker Markt	7

	Stage ¹⁾ Stade ¹⁾ Stadium ¹⁾ Estado ¹⁾	English	français	Deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
10.	62-65	Leaflet width	Foliole: largeur	Fiederblatt: Breite	Folíolo: anchura		
(*)	(b)	narrow	étroite	schmal	estrecho	The Sutton	3
		medium	moyenne	mittel	medio	Optica	5
		broad	large	breit	ancho	Osnabrücker Markt	7
11.	62-65	Leaflet: position of maximum width	Foliole: position de la largeur maximale	Fiederblatt: Position der maximalen Breite	Folíolo: punto de anchura máxima		
(*)	(b)	towards tip	vers le sommet	zur Spitze hin	hacia el ápice		1
		at middle	au milieu	in der Mitte	al medio		2
		towards base	vers la base	zur Basis hin	hacia la base		3
12.	70-78	Leaflet: folding (along the main vein, terminal pair of leaflets)	Feuille: plissure (le long de la nervure principale, paire de folioles terminale)	Fiederblatt: Faltung (entlang der Mittelrippe, Endfiederpaar)	Folíolo: plegado (a lo largo del nervio principal, par de folíolos terminales)		
	(b)	weak	faible	gering	débil	Metissa	3
		medium	moyenne	mittel	medio		5
		strong	forte	stark	fuerte	Minica	7
13.	62-65	Raceme: number of flowers	Racème: nombre de fleurs	Blütenstand: Anzahl Blüten	Racimo. número de flores		
(*)	(b)	few	faible	gering	bajo	Aguadulce Claudia	3
		medium	moyen	mittel	medio		5
		many	élevé	groß	alto		7
14.	60	Time of flowering (50% of the plants with at least one flower)	Époque de floraison (50% des plantes avec au moins une fleur)	Blühzeitpunkt (50% der Pflanzen zeigen wenigstens eine Blüte)	Época de floración (50% de las plantas con al menos una flor)		
(*)		early	précoce	früh	temprana	Minica, Optica	3
		medium	moyenne	mittel	media	Futura	5
		late	tardive	spät	tardía	Osnabrücker Markt	7

	Stage ¹⁾ Stade ¹⁾ Stadium ¹⁾ Estado ¹⁾	English	français	Deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
15.	60-65	Flower: length	Fleur: longueur	Blüte: Länge	Flor: longitud		
(+)							
	(b)	short	courte	kurz	corta	Aguadulce Claudia, The Sutton	3
		medium	moyenne	mittel	media	Minica	5
		long	longue	lang	larga	Green Windsor	7
16.	60-65	Wing: melanin spot	Aile: tache de mélanine	Flügel: Melaninfleck	Quilla: mancha de melanina		
(*)		absent	absente	fehlend	ausente	Driemaal Wit, Metissa	1
		present	présente	vorhanden	presente	Futura, Trio	9
17.	60-65	Wing: colour of melanin spot	Aile: couleur de la tache de mélanine	Flügel: Farbe des Melaninflecks	Quilla: color de la mancha de melanina		
(*)		greenish yellow	jaune verdâtre	grünlichgelb	amarillo verdoso	Golda	1
		brown	brune	braun	marrón		2
		black	noire	schwarz	negro	Futura, Trio	3
18.	60-65	Standard: melanin spot	Étendard: tache de mélanine	Fahne: Melaninfleck	Estandarte: mancha de melanina		
		absent	absente	fehlend	ausente	Driemaal Wit, Futura	1
		present	présente	vorhanden	presente	Felix	9
19.	60-65	Standard: anthocyanin coloration	Étendard: pigmentation anthocyanique	Fahne: Anthocyanfärbung	Estandarte: pigmentación antociánica		
(*)		absent	absente	fehlend	ausente	Driemaal Wit	1
		present	présente	vorhanden	presente		9

Stage ¹⁾ Stade ¹⁾ Stadium ¹⁾ Estado ¹⁾	English	français	Deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota	
20. (+)	60-65	Standard: extent of anthocyanin coloration	Étendard: extension de la pigmentation anthocyanique	Fahne: Ausdehnung der Anthocyanfärbung	Estandarte: extensión de la pigmentación antociánica		
		small	faible	gering	pequeña	The Sutton, Osnabrücker Markt	3
		medium	moyenne	mittel	media		5
		large	forte	groß	grande		7
21.	70-78	Truss: number of pods	Cyme: nombre de gousses	Fruchtstand: Anzahl Hülsen	Racimo: número de vainas		
		few	rares	gering	bajo	Aguadulce Claudia, Muchamiel	3
		medium	moyennes	mittel	medio	Metissa	5
		many	nombreuses	groß	alto		7
22. (*)	75-80	Pod: attitude	Gousse: port	Hülse: Stellung	Vaina: porte		
	(a)	erect	dressé	aufrecht	erecto	Optica	1
	(b)	semi-erect	demi-dressé	halbaufrecht	semierecto	Statissa, The Sutton	3
		horizontal	horizontal	waagerecht	horizontal	Trio	5
		semi-pendulous	demi-retombant	halbhängend	semicolgante	Express	7
		pendulous	retombant	hängend	colgante	Lange Hangers, Futura	9
23. (*)	80	Pod: length (without beak)	Gousse: longueur (sans le bec)	Hülse: Länge (ohne Zahn)	Vaina: longitud (sin el pico)		
	(a)	very short	très courte	sehr kurz	muy corta	Arbo	1
	(b)	short	courte	kurz	corta	Green Windsor, Optica	3
		medium	moyenne	mittel	media	Driemaal Wit, Red Epicure	5
		long	longue	lang	larga	Dreadnought	7
		very long	très longue	sehr lang	muy larga	Hangdown Grünkernig	9

	Stage ¹⁾ Stade ¹⁾ Stadium ¹⁾ Estado ¹⁾	English	français	Deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
24. (*)	80	Pod: width (from suture to suture)	Gousse: largeur (de suture à suture)	Hülse: Breite (von Naht zu Naht)	Vaina: anchura (de sutura a sutura)		
	(a)	narrow	étroite	schmal	estrecha	Felix, Minica	3
	(b)	medium	moyenne	mittel	media	Trio, Express	5
		broad	large	breit	ancha	Con Amore	7
		very broad	très large	sehr breit	muy ancha	Aguadulce Claudia	9
25. (+)	80	Pod: degree of curvature at green shell stage	Gousse: intensité de la courbure au stade vert	Hülse: Stärke der Krümmung im Grünhülsenstadium	Vaina: grado de curvatura en la etapa de vainas verdes		
	(b)	absent or very weak	nulle ou très faible	fehlend oder sehr gering	ausente o muy débil	Optica	1
		weak	faible	gering	débil	Metissa	3
		medium	moyenne	mittel	media	Witkiem	5
		strong	forte	stark	fuerte	Groene Hangers, Futura	7
26.	80	Pod: intensity of green color	Gousse: intensité de la couleur verte	Hülse: Intensität der Grünfärbung	Vaina: intensidad del color verde		
	(a)	light	faible	hell	claro	Futura	3
	(b)	medium	moyenne	mittel	medio	Driemaal Wit	5
		dark	forte	dunkel	oscuro	Statissa	7
27. (*)	80	Pod: number of ovules (including seeds)	Gousse: nombre d'ovules (y compris les semences)	Hülse: Anzahl Samenanlagen (einschließlich Samen)	Vaina: número de óvulos (incluidas las semillas)		
	(a)	few	rares	gering	bajo	White Windsor	3
	(b)	medium	moyens	mittel	medio	Aquadulce Claudia	5
		many	nombreux	groß	alto	Imperial Green, Longpod	7

Stage ¹⁾ Stade ¹⁾ Stadium ¹⁾ Estado ¹⁾	English	français	Deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
28.	80	Pod: thickness of pod wall	Gousse: épaisseur de la cosse	Hülse: Dicke der Hülsenwand	Vaina: espesor de la pared	
	(a)	thin	fine	dünn	delgada	Statissa 3
	(b)	medium	moyenne	mittel	media	5
		thick	épaisse	dick	gruesa	Aguadulce Claudia, Futura 7
29.	99	Dry seed: shape of median longitudinal section	Graine sèche: forme de la section longitudinale médiane	Trockenkorn: Form des medianen Längsschnitts	Grano seco: forma de la sección longitudinal media	
	(c)	narrow elliptic	elliptique étroite	schmal elliptisch	elíptica estrecha	Metissa 1
		elliptic	elliptique	elliptisch	elíptica	2
		broad elliptic	elliptique large	breit elliptisch	elíptica ancha	Futura 3
30.	99	Dry seed: shape of cross section	Graine sèche: forme de la section transversale	Trockenkorn: Form des Querschnitts	Grano seco: forma de la sección transversal	
	(c)	narrow elliptic	elliptique étroite	schmal elliptisch	elíptica estrecha	Aguadulce Claudia, Futura 1
		elliptic	elliptique	elliptisch	elíptica	2
		broad elliptic	elliptique large	breit elliptisch	elíptica ancha	3
31. (* (+)	99	Dry seed: weight	Graine sèche: poids	Trockenkorn: Gewicht	Grano seco: peso	
	(c)	very low	très faible	sehr niedrig	muy bajo	Albinette, Minica 1
		low	faible	niedrig	bajo	Arbo, Felix 3
		medium	moyen	mittel	medio	The Sutton, Trio 5
		high	élevé	hoch	alto	Futura, Red Epicure 7
		very high	très élevé	sehr hoch	muy alto	White Windsor 9

Stage ¹⁾ Stade ¹⁾ Stadium ¹⁾ Estado ¹⁾	English	français	Deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota	
32. (*)	99	Dry seed: color of testa (immediately after harvest)	Graine sèche: couleur du tégument (immédiatement après la récolte)	Trockenkorn: Farbe der Samenschale (gleich nach der Ernte)	Grano seco: color de la testa (justo después de la cosecha)		
	(c)	beige	beige	beige	beige	Driemaal Wit, Trio	1
		green	vert	grün	verde	Green Windsor	2
		red	rouge	rot	rojo	Red Epicure	3
		violet	violet	violett	violeta	Reina Mora	4
		black	noir	schwarz	negro		5
33. (+)	99	Dry seed: black pigmentation of hilum	Graine sèche: pigmentation noire du hile	Trockenkorn: schwarze Pigmentierung des Nabels	Grano seco: coloración negra del hilo		
	(c)	absent	absente	fehlend	ausente	Driemaal Wit	1
		present	présente	vorhanden	presente	Aquadulce Claudia	9
34.	99	Time of full development of pod (first fully developed pods)	Époque de développement complet de la gousse (premières gousses complètement développées)	Zeitpunkt der vollen Entwicklung der Hülse (erste vollentwickelte Hülsen)	Época de desarrollo completo de la vaina (primeras vainas completamente desarrolladas)		
		early	précoce	früh	temprana	Express	3
		medium	moyenne	mittel	media	Driemaal Wit	5
		late	tardive	spät	tardía	Imperial Green Longpod	7

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) Foliage and pod: Unless otherwise indicated, all observations on the foliage and pod should be made before green harvest maturity.
- (b) Leaflet, raceme, flower, pod: All measurements of the leaflet, flower and pod should be made at the 2nd flowering node.
- (c) Dry seed: All observation on the dry seed should be made on harvested dry seed.

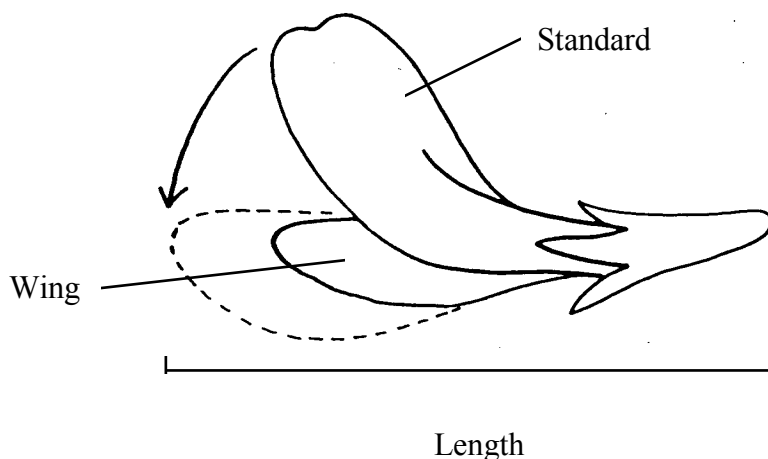
8.2 *Explanations for individual characteristics*

Ad. 1: Seed: tannin

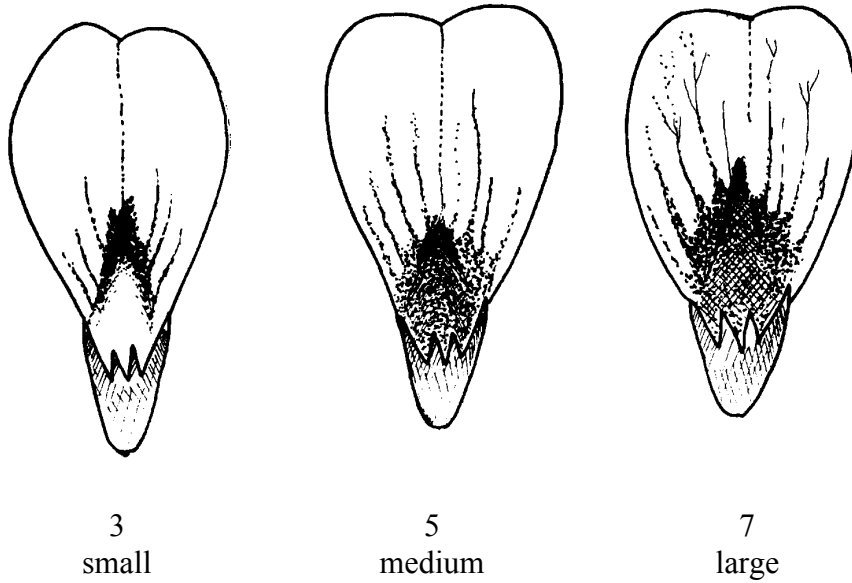
The tannin content of testa correlates with melanin spot on the flower wing. Maintaining both characteristics is necessary, as observations are made at very different stages and different times. The content of tannin should be tested by removing a piece of the testa from the seed and placing 1 or 2 drops of the test reagent upon its inner surface. A bright pink colour will develop within 1 or 2 minutes in the presence of tannins. (Reagents: A = 50% ethanol; B = 1% vanillin in concentrated HCl. A and B mixed 1:1 for use. For the purposes of this test, 'concentrated' is defined as within the range 33-37% weight by volume.)

Seeds that are yellowish grey immediately after harvest will turn brown after ageing if they contain tannin.

Ad. 15: Flower: length



Ad. 20: Standard: extent of anthocyanin coloration



The observation should be made on the inner side of the Standard.

Ad. 25: Pod: degree of curvature at green shell stage



1
absent or very weak



3
weak



5
medium



7
strong

Ad. 31: Dry seed: weight

The dry seed weight should be measured by weighing the largest seed from the largest pod for each plant sampled.

Ad. 33: Dry seed: black pigmentation of hilum

Certain varieties, which by their genetic structure show segregation in respect of this characteristic, are admissible provided that the breeder is able to ensure stability. However, this characteristic cannot be used for establishing distinctness of varieties mentioned in the previous sentence. For varieties which show segregation, the characteristic should be described in the state "present" and the proportions of the two states of expression should, in each individual case, be included in the description.

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

¹ Stem elongation may occur earlier than stage 19; in this case continue with the principal stage 3.

Code	Description
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
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

² First internode extends from the scale leaf node to the first true leaf node.

Code	Description
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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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 Latin Name	<input type="text" value="Vicia faba L. var. major Harz"/>	
1.2 Common Name	<input type="text" value="Broad Bean"/>	
2. Applicant		
Name	<input type="text"/>	
Address	<input type="text"/>	
Telephone No.	<input type="text"/>	
Fax No.	<input type="text"/>	
E-mail address	<input type="text"/>	
Breeder (if different from applicant)	<input type="text"/>	
3. Proposed denomination and breeder's reference		
Proposed denomination (if available)	<input type="text"/>	
Breeder's reference	<input type="text"/>	

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:
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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)
- (b) partially unknown cross []
 (please state known parent variety(ies))
- (c) totally unknown cross []

4.1.2 Mutation []
 (please state parent variety)

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

4.1.4 Other []
 (please provide details)

4.2 Method of Propagating the Variety

- (a) Self-pollination []
- (b) Cross-pollination []
 (i) population []
 (ii) synthetic variety []
- (c) Hybrid []
 (see below)
- (d) Other []
 (please provide details)

In the case of hybrid varieties the production scheme for the hybrid should be provided on a separate sheet. This should provide details of all the lines required for propagating the hybrid, e.g.

Single Hybrid (SH)

(...female parent...) x (...male parent...)

Three-Way Hybrid (3WH)

(...female line...) x (...male line...)

=> single hybrid used as female parent x (...male parent...)

and should identify in particular:

- (a) any male sterile lines
- (b) maintenance system of male sterile lines.

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:	
<p>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).</p>			
Characteristics	Example Varieties	Note	
<p>5.1 Plant: growth type (2)</p>			
determinate	Samson, Smerf	1[]	
indeterminate	Driemaal Wit	2[]	
<p>5.2 Plant: height (3)</p>			
very short	The Sutton	1[]	
short	Arbo, Reina Mora	3[]	
medium	Aquadulce Claudia	5[]	
tall	Dreadnought	7[]	
very tall	Imperial White Windsor	9[]	
<p>5.3 Wing: melanin spot (16)</p>			
absent	Driemaal Wit, Metissa	1[]	
present	Futura, Trio	9[]	
<p>5.4 Pod: length (without beak) (23)</p>			
very short	Arbo	1[]	
short	Green Windsor, Optica	3[]	
medium	Driemaal Wit, Red Epicure	5[]	
long	Dreadnought	7[]	
very long	Hangdown Grünkernig	9[]	

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:
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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 Special conditions for the examination of the variety

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

Yes No

7.2.2 If yes, please give details:

7.3 Other information

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

Applicant's name

Signature Date