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TG/8/6

UPOV

INTERNATIONAL UNION FOR THE PROTECTION OF NEW VARIETIES OF PLANTS

UNION INTERNATIONALE POUR LA PROTECTION DES OBTENTIONS VÉGÉTALES

INTERNATIONALER VERBAND ZUM SCHUTZ VON PFLANZEN-ZÜCHTUNGEN

UNIÓN INTERNACIONAL PARA LA PROTECCIÓN DE LAS OBTENCIONES VEGETALES

GUIDELINES

FOR THE CONDUCT OF TESTS

FOR DISTINCTNESS, UNIFORMITY AND STABILITY

FIELD BEAN

(*Vicia faba* L. *var. minor*)

GENEVA
2002

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These Guidelines should be read in conjunction with document TG/1/2, which contains explanatory notes on the general principles on which the Guidelines have been established.

TABLE OF CONTENTS PAGE

I. Subject of these Guidelines

These Test Guidelines apply to all varieties of Field Bean (*Vicia faba* L. *var. minor).*

II. Material Required

1. The competent authorities decide when, where and in what quantity and quality the plant material required for testing the variety 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 are complied with. The minimum quantity of seed to be supplied by the applicant is:

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. The plant material must not have undergone any treatment unless the competent authorities allow or request such treatment. If it has been treated, full details of the treatment must be given.

III. Conduct of Tests

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

2. The tests should normally be conducted at one place. If any important characteristics of the variety cannot be seen at that place, the variety may be tested at an additional place.

3. 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. The size of the plots should be such that plants or parts of plants may be removed for measurement and counting without prejudice to the observations which must be made up to the end of the growing cycle. Each test should be designed to result in a total of at least 160 plants, which should be divided between 2 or more replicates. Separate plots for observation and for measuring should only be used if they have been subject to similar environmental conditions.

4. Additional tests for special purposes may be established.

IV. Methods and Observations

1. Unless otherwise stated, all observations on spaced plants should be made on 60 plants or parts taken from each of 60 plants.

2. Unless otherwise indicated, the assessment of uniformity for cross-pollinated varieties should be according to the recommendations in the General Introduction.

V. Grouping of Varieties

1. The collection of varieties to be grown should be divided into groups to facilitate the assessment of distinctness. Characteristics which are suitable for grouping purposes are those which are known from experience not to vary, or to vary only slightly, within a variety. Their various states of expression should be fairly evenly distributed throughout the collection.

2. It is recommended that the competent authorities use the following characteristics for grouping varieties:

(a) Wing: melanin spot (characteristic 8)
(b) Plant: growth type (characteristic 12)
(c) Dry seed: color of testa (characteristic 19)

VI. Characteristics and Symbols

1. To assess distinctness, uniformity and stability, the characteristics and their states as given in the Table of Characteristics should be used.

2. Notes (numbers), for the purposes of electronic data processing, are given opposite the states of expression for each characteristic. For certain characteristics, different example varieties, separated by a semicolon, are indicated for spring types and winter types of field bean. Where winter varieties are indicated, they follow the semicolon.

3. Legend

(*) Characteristics that should be used on all varieties in every growing cycle over which examinations are made and always be included in the variety descriptions, except when the state of expression of a preceding characteristic or regional environmental conditions render this impossible.

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

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 at the end of Chapter VIII.

MG: 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 observations of a number of individual plants or parts of plants

VII. 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.	**19-61** **VG**	**Foliage: color**	**Feuillage: couleur**	**Laub: Farbe**	**Follaje: color**		
		light green	vert clair	hellgrün	verde claro	Tista; Hiverna	1
		medium green	vert moyen	mittelgrün	verde medio	Gloria	2
		dark green	vert foncé	dunkelgrün	verde oscuro		3
		bluish green	vert bleuâtre	bläulichgrün	verde azulado		4
		greyish green	vert grisâtre	gräulichgrün	verde grisáceo	Columbo	5
2. **(*)**	**61** **MS**	**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)**		
		very early	très précoce	sehr früh	muy temprana		1
		early	précoce	früh	temprana	Pistache	3
		medium	moyenne	mittel	media	Victor	5
		late	tardive	spät	tardía	Vasco	7
		very late	très tardive	sehr spät	muy tardía	; Hiverna*	9
3.	**61-71** **VG**	**Only varieties with melanin spot: Stem: anthocyanin coloration**	**Seulement pour les variétés avec tâche de mélanine: Tige: pigmentation anthocyanique**	**Nur Sorten mit Melaninfleck: Trieb: Anthocyan-färbung**	**Sólo para variedades con mancha de melanina: Tallo: pigmentación antociánica**		
		weak	faible	gering	débil	Pistache, Divine	3
		medium	moyenne	mittel	media	Victor	5
		strong	forte	stark	fuerte		7

* in spring sown trial
essai semé au printemps
bei Frühjahraussaat
ensayos sembrados en primavera

	Stage [1)] Stade [1)] Stadium [1)] Estado [1)]	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
4. **(*)** **(+)**	**61-65** **MS**	**Leaflet: length (basal pair of leaflets at second flowering node)**	**Foliole: longueur (paire basale de folioles au 2e nœud florifère)**	**Fiederblatt: Länge (Basisfieder-blattpaar am zweiten blühenden Knoten)**	**Foliolo: longitud (par de foliolos basales en el segundo nudo floral)**		
		short	courte	kurz	corto	Pistache; Delta	3
		medium	moyenne	mittel	medio	Victor	5
		long	longue	lang	largo	Limbo	7
5. **(*)** **(+)**	**61-65** **MS**	**Leaflet: width (as for 4)**	**Foliole: largeur (comme pour 4)**	**Fiederblatt: Breite (wie unter 4)**	**Foliolo: anchura (como para 4)**		
		narrow	étroite	schmal	estrecho	Castel	3
		medium	moyenne	mittel	medio	Columbo; Karl	5
		broad	large	breit	ancho	Condor	7
6. **(+)**	**61-65** **VS**	**Leaflet: position of maximum width (as for 4)**	**Foliole: position de la largeur maximale (comme pour 4)**	**Fiederblatt: Stellung der höchsten Breite (wie unter 4)**	**Foliolo: punto de anchura máxima (como para 4)**		
		towards tip	vers le sommet	zur Spitze	hacia el ápice	Pistache	1
		at middle	au milieu	in der Mitte	en la zona central	Signal	2
		towards base	vers la base	zur Basis	hacia la base	Victor	3
7. **(+)**	**61-65** **MS**	**Flower: length**	**Fleur: longueur**	**Blüte: Länge**	**Flor: longitud**		
		short	courte	kurz	corta	Pistache	3
		medium	moyenne	mittel	media	Caspar	5
		long	longue	lang	larga	Victor	7
8. **(*)** **(+)**	**61-65** **VG**	**Wing: melanin spot**	**Aile: tâche de mélanine**	**Flügel: Melaninfleck**	**Quilla: mancha de melanina**		
		absent	absente	fehlend	ausente	Caspar	1
		present	présente	vorhanden	presente	Victor	9

	Stage [1)] Stade [1)] Stadium [1)] Estado [1)]	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
9.	**61-65** **VG**	**Wing: color of melanin spot**	**Aile: couleur de la tâche de mélanine**	**Flügel: Farbe des Melaninflecks**	**Quilla: color de la mancha de melanina**		
		brown	brune	braun	marrón	Goldrush	1
		black	noire	schwarz	negro	Condor	2
		greenish yellow	jaune verdâtre	grünlichgelb	amarillo verdoso		3
10. **(*)**	**61-65** **VG**	**Standard: anthocyanin coloration**	**Étendard: pigmentation anthocyanique**	**Fahne: Anthocyan-färbung**	**Estandarte: pigmentación antociánica**		
		absent	absente	fehlend	ausente	Caspar	1
		present	présente	vorhanden	presente	Pistache, Condor	9
11. **(+)**	**61-65** **VG**	**Standard: extent of anthocyanin coloration**	**Étendard: extension de la pigmentation anthocyanique**	**Fahne: Ausmaß der Anthocyan-färbung**	**Estandarte: extensión de la pigmentación antociánica**		
		small	faible	gering	pequeña	Pistache	3
		medium	moyenne	mittel	media	; Hiverna	5
		large	forte	groß	grande		7
12. **(+)**	**71-81** **VG**	**Plant: growth type**	**Plante: type de croissance**	**Pflanze: Wuchstyp**	**Planta: hábito de crecimiento**		
		determinate	déterminée	begrenzt wachsend	determinado	Tista	1
		indeterminate	indéterminée	unbegrenzt wachsend	indeterminado	Condor	2
13. **(*)**	**71-81** **MS**	**Plant: height**	**Plante: hauteur**	**Pflanze: Höhe**	**Planta: altura**		
		short	basse	niedrig	baja	Pistache	3
		medium	moyenne	mittel	media	Columbo	5
		tall	haute	hoch	alta	Condor	7

	Stage [1)] Stade [1)] Stadium [1)] Estado [1)]	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
14.	**71-81** **MS**	**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	Columbo	3
		medium	moyen	mittel	medio	Caspar	5
		many	élevé	groß	alto	Vasco	7
15. **(*)**	**71-81** **MS**	**Pod: length (without beak)**	**Gousse: longueur (sans le bec)**	**Hülse: Länge (ohne Zahn)**	**Vaina: longitud (sin el pico)**		
		very short	très courte	sehr kurz	muy corta	Maris Bead	1
		short	courte	kurz	corta	Condor	3
		medium	moyenne	mittel	media	Gloria	5
		long	longue	lang	larga	Caspar, Vasco	7
16.	**71-81** **MS**	**Pod: width (from suture to suture)**	**Gousse: largeur (d'une suture à l'autre)**	**Hülse: Breite (von Naht zu Naht)**	**Vaina: anchura (de sutura a sutura)**		
		narrow	étroite	schmal	estrecha	Condor	3
		medium	moyenne	mittel	media	Pistache	5
		broad	large	breit	ancha	Victor	7
17. **(+)**	**89** **VS**	**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**		
		circular	circulaire	rund	circular	Maris Bead	1
		elliptic	elliptique	elliptisch	elíptica	Condor	2
		irregular	irrégulière	unregelmäßig	irregular	Columbo	3

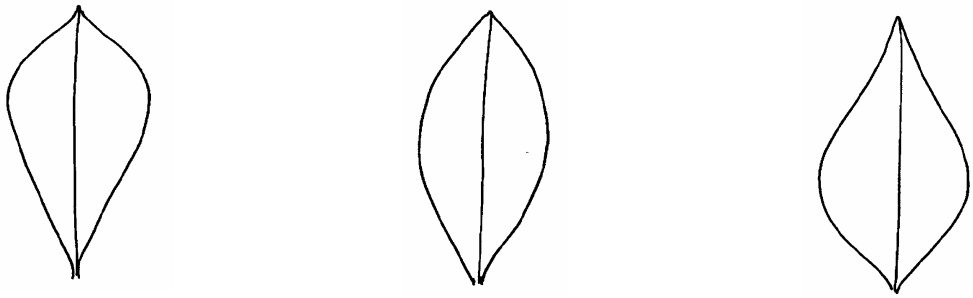
	Stage [1)] Stade [1)] Stadium [1)] Estado [1)]	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
18. **(*)**	**89** **MG**	**Dry seed: 100 seed weight**	**Graine sèche: poids de 100 graines**	**Trockenkorn: Hundertkorn- gewicht**	**Grano seco: peso de 100 granos**		
		low	faible	niedrig	pequeño	Condor, Gloria	3
		medium	moyen	mittel	medio	Victor	5
		high	élevé	hoch	grande	Pistache	7
19. **(*)** **(+)**	**89** **VS**	**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)**		
		beige	beige	beige	beige	Condor	1
		grey beige	grège	graubeige	beige grisáceo	Caspar	2
		green	vert	grün	verde	Palacio	3
		red	rouge	rot	rojo		4
		violet	violet	violett	violeta		5
		black	noir	schwarz	negro	Tyrol	6
20. **(+)**	**89** **VS**	**Dry seed: black pigmentation of hilum**	**Graine sèche: pigmentation noire du hile**	**Trockenkorn: schwarze Pigmentierung des Nabels**	**Grano seco: coloración negra del hilum**		
		absent	absente	fehlend	ausente	Victor	1
		present	présente	vorhanden	presente	Condor	9

VIII. Explanations on the Table of Characteristics

Ad. 4 and 5: Leaflet: length (basal pair of leaflets at second flowering node) and Leaflet: width (as for 4)

If there is any difference in size between the two pairs of leaflets, the bigger should be observed.

Ad 6: Leaflet: position of maximum width

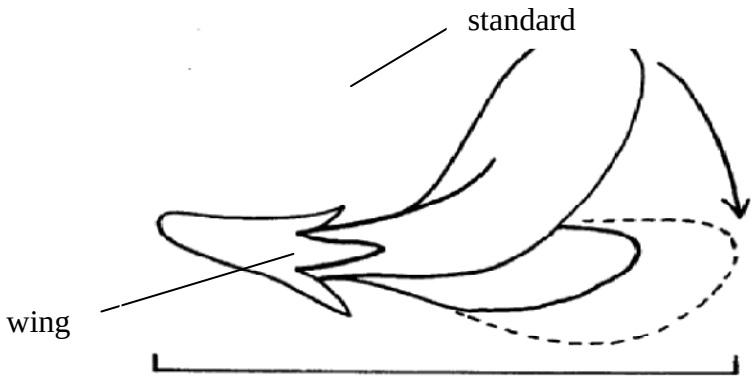


1
towards tip

2
at middle

3
towards base

Ad 7: Flower: length

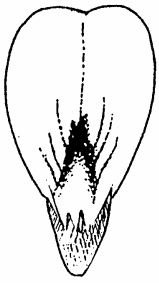


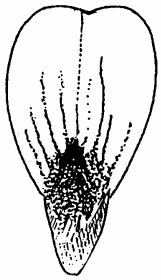
Ad 8: Wing: melanin spot

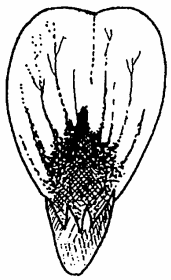
Melanin spot on the flower wing correlates with tannin content of testa. Therefore, this characteristic can also be assessed by using the following method. The content of tannin should be tested by removing a piece of the testa from the seed and placing 1 or 2 drops of the test reagent upon its inner surface. A bright pink color will develop within 1 or 2 minutes in the presence of tannins (Reagent: A = 50% ethanol; B = 1% vanillin in conc. HCl; Reagents A and B mixed 1:1 for use).

Ad 11: Standard: extent of anthocyanin coloration

The observation is made on the inner side of the standard.







7
large

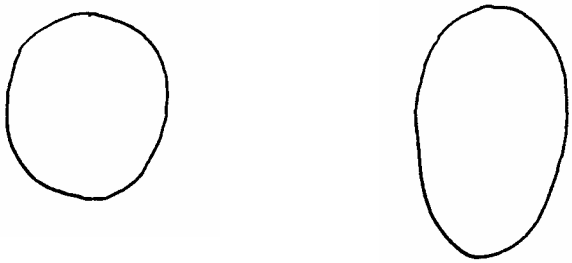
characteri
etative gro

al inflorescence, whereas
ermost flowers.

1
determinate

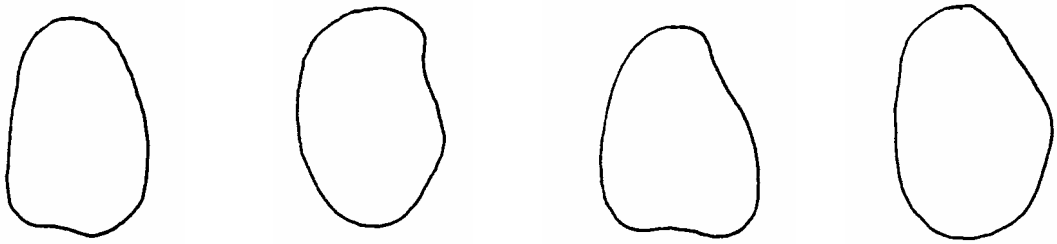
2
indeterminate

Ad 17: Dry seed: shape of median longitudinal section



1
circular

2
elliptic



3
irregular

Ad 19: Dry seed: color of testa (immediately after harvest)

Seeds that are beige immediately after harvest will become brown after ageing if they contain tannin.

Ad 20: Dry seed: black pigmentation of hilum

A population standard of 5% with an acceptance probability of at least 95% is recommended for the assessment of uniformity. Certain varieties, which by their genetic structure show segregation in respect of this characteristic, are admissable 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.

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

IX. Literature

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X. Technical Questionnaire

	Reference Number (not to be filled in by the applicant)

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

1. Species	*Vicia faba* L. *var. minor* FIELD BEAN
2. Applicant (Name and address)	
3. Proposed denomination or breeder's reference	

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

4.1 Variety type

Open pollinated variety [ ]

Other type [ ]
(to be indicated)

4.2 Genetic origin and breeding method

4.3 Other information

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

	Characteristics	Example Varieties	Note
5.1 (2)	**Time of flowering (50% of the plants with at least one flower)**		
	very early		1[ ]
	early	Pistache	3[ ]
	medium	Victor	5[ ]
	late	Vasco	7[ ]
	very late	Hiverna *)	9[ ]
5.2 (8)	**Wing: melanin spot**		
	absent	Caspar	1[ ]
	present	Victor	9[ ]
5.3 (12)	**Plant: growth type**		
	determinate	Tista	1[ ]
	indeterminate	Condor	2[ ]
5.4 (13)	**Plant: height**		
	short	Pistache	3[ ]
	medium	Columbo	5[ ]
	tall	Condor	7[ ]
5.5 (18)	**Dry seed: 100 seed weight**		
	low	Condor, Gloria	3[ ]
	medium	Victor	5[ ]
	high	Pistache	7[ ]

*) In spring sown trials.

	Characteristics	Example Varieties	Note
5.6 (19)	**Dry seed: color of testa (immediately after harvest)**		
	beige	Condor	1[ ]
	grey beige	Caspar	2[ ]
	green	Palacio	3[ ]
	red		4[ ]
	violet		5[ ]
	black	Tyrol	6[ ]

6. Similar varieties and differences from these varieties

Denomination of similar variety	Characteristic in which the similar variety is different o)	State of expression of similar variety	State of expression of candidate variety

o) In the case of identical states of expressions of both varieties, please indicate the size of the difference.

7. Additional information which may help to distinguish the variety

7.1 Resistance to pests and diseases

7.2 Special conditions for the examination of the variety

Type of development: spring type [ ]

winter type [ ]

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 that question is yes, please attach a copy of such an authorization.

[End of document]