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UPOV

INTERNATIONAL UNION FOR THE PROTECTION OF NEW VARIETIES OF PLANTS

GENEVA

DRAFT

FLAX, LINSEED

UPOV Code: LINUM_USI

Linum usitatissimum L.

GUIDELINES

FOR THE CONDUCT OF TESTS

FOR DISTINCTNESS, UNIFORMITY AND STABILITY

prepared by experts from France

to be considered by the
Technical Working Party for Agricultural Crops at its thirty-eighth session,
to be held in Seoul, Republic of Korea, from August 31 to September 4, 2009

Alternative Names:*

Botanical name	*English*	*French*	*German*	*Spanish*
Linum usitatissimum L.	Flax, Linseed	Lin	Lein, Flachs	Lino

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 *Linum usitatissinum* 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 kg

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 second column of the Table of Characteristics. The stages of development denoted by each number are described at the end of Chapter 8.

3.3.3 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 Each test should be designed to result in a total of at least 1,000 plants, which should be divided between two or more 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 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 the 40 plants, ~~divided by two or more replicates~~, and any other observations made on all plants in the test.

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, a population standard of 1% and an acceptance probability of at least 95% should be applied. In the case of a sample size of 1,000 plants, 15 off-types are allowed.

4.2.3 For characteristic “Flower: color of corolla (when fully opened)”, a population standard of 0.1% and an acceptance probability of at least 95% should be applied. In the case of a sample size of 1,000 plants, 3 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 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) Flower: color of corolla (characteristic 4)
(b) Boll: ciliation of false septa (characteristic 17)
(c) Stem: length from cotyledon scar to first branch (characteristic 22)
(d) Seed: color (characteristic 24)

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 Chapter 6.1.2

QL: Qualitative characteristic – see Chapter 6.3
QN: Quantitative characteristic – see Chapter 6.3
PQ: Pseudo-qualitative characteristic – see Chapter 6.3

MG, MS, VG, VS: See Chapter 3.3.3

(a), (b) : See Explanations on the Table of Characteristics in Chapter 8.2

(+) See Explanations on the Table of Characteristics in Chapter 8.3

55-99 See Chapter 3.3.2 and Explanations on the Table of Characteristics in Chapter 8.4

(F) = Fibre type
(O) = Oil type

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

		English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
1. **(+)**	**VG**	**Petal: color of crown at bud stage**	**Pétale : couleur de la corolle au stade bouton**	**Blütenblatt: Farbe der Krone im Knospenstadium**			
PQ	**55-61**	white				Belinka (F), Laser (O)	1
		pink				Hella (O)	2
		violet				~~Lorea (F),~~ Violin (F) ~~Early bird (O~~), Oural (O)	3
		blue violet				~~Ariane (F),~~ Lorea (F) Biltstar (O)	4
2. **(*)** **(+)**	**MG**	**Time of beginning of flowering**	**Époque de début de floraison**	**Zeitpunkt des Blühbeginns**			
QN	~~**61**~~	very early				~~Mikael (O~~) Barbara (O)	1
		early	précoce	früh		~~Barbara (O)~~ Eole (O)	3
		medium	moyenne	mittel		Alaska (O), ~~Viking (F)~~ Aretha (F)	5
		late	tardive	spät		~~Argos (F), Lola (O)~~ Aries (O), Agatha (F)	7
		very late				Drakkar (F), Polar (O)	9
3. **(+)**	**VG** **61-65**	**Flower: shape of corolla**					
QN	**(a)**	circular				Altess (O), Caesar augutus (F)	1
		circular to pentagonal				Oural (O), Andrea (F)	2
		pentagonal				Biltstar (O), Electra (F)	3

		English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
4. (*)	**VG 61-65**	**Flower: color of corolla ~~(when fully opened)~~**	**Pétale: couleur de la corolle ~~(à complet développement)~~**	**Blütenblatt : Farbe der Krone ~~(vollent wickelt)~~**			
PQ	**(a)**	white				Belinka (F), Laser (O)	1
		pink				Petra (O)	2
		red violet				~~Adelie (F),~~ ~~Olinette (O)~~	3
		violet				~~Viola (F),~~ Hungarian Gold (O),	4
		blue violet				Hermes (F), Niagara (O)	5
		medium blue				Escalina (F), ~~Barbara (O)~~,	6
		light blue				Melina (F), Biltstar (O)	7
5. (+)	**MS or VG 61-65**	**Flower: size of corolla**	**Fleur : taille de la corolle**	**Blüte: Größe der Krone**			
QN	**(a)**	small	petite	klein	pequeño	~~Viking (F),~~ Laser (O)	3
		medium	moyenne	mittel	medio	Ingot (O)	5
		large	grande	groß	grande	Juliet (O)	7
6. (+)	**VG 61-65**	**<u>Only varieties with colored corolla</u>: Flower : shape of the corolla's heart**					
QN	**(a)**	circular				Barbara (O)	1
		circular to pentagonal				Agatha (F), Eole (O)	2
		pentagonal				Baikal (O), Hermes (F)	3

		English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
7.	**MS 61-65**	**Petal: length**					
QN	**(a)**	very short				Lorea (F)	1
	(b)	short				Diane (F)	3
		medium				~~Escalina (F)~~	5
		long				~~Mikael (F)~~	7
		very long					9
8.	**MS 61-65**	**Petal: width**	*DE : to combine char 8 and 9 and to read Petal : width in relation to length*				
QN	**(a)**	very narrow				Lorea (F)	1
	(b)	narrow				Diane (F)	3
		medium				~~Hella (O),~~ Agatha (F)	5
		broad				~~Evelin (F),~~ ~~Mikeal (O~~)	7
		very broad				Violin (F)	9
9.	**MS 61-65**	**Petal: ratio length/width**					
QN	**(b)**	very compressed				Violin (F)	1
		moderately compressed				~~Mikael (O),~~ Venica (F)	3
		medium				Alizee (F)	5
		moderately elongated				Electra (F)	7
		very elongated				Hermes (F)	9
10.	**VG 61-65**	**Stamen: color of distal part of filament**	**Étamine : couleur de la partie distale du filet**	**Staubblatt: Farbe des distalen Teils des Staubfadens**			
PQ	**(a)**	white	blanche	weiß			1
		blue	bleue	blau		Belinka (F), Laser (O)	2
		~~violet~~				Bilton (O)	~~3~~

		English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
11. (*)	**VG 61-65**	**Anther: color**	**Anthère : couleur**	**Staubbeutel: Farbe**			
PQ		yellowish	jaunâtre	gelblich		Laser (O)	1
		pinkish	saumonée	lachsfarben		Aardvark (F), Hella (O)	2
		greyish	grisâtre	zartgrau		Opaline (F)	3
		bluish	bleuâtre	bläulich		Bilton (O), Escalina (F)	4
12. (*)	**VG 61-65**	**Style: color**	**Style : couleur**	**Griffel: Farbe**			
PQ	**(a)**	white	blanche	weiß		Abacus (O), Belinka (F)	1
		white with a yellow point at base					2
		yellow	jaune	gelb			3
		white with a blue point at base				Banquise (O)	4
		blue	bleue	blau		Hivernal (O)	5
~~**13.**~~ ~~**(+)**~~	~~**VG 55-65**~~	~~**Sepal: dotting**~~	*FR : reluctant*				
~~**QN**~~		~~absent or weak~~	*CZ : to be deleted (influence by the environment)*			Agatha (F), Recital (O)	1
		~~medium~~	*DE : to be deleted*			Alizee (F), Eole (O)	2
		~~strong~~				Baladin (O)	3

		English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
14. (+)	**MG 65-69**	**Plant: natural height**	**Plante: hauteur naturelle**	**Pflanze: Höhe**	**Planta: altura**		
QN		very short	très basse	sehr niedrig	muy corta	~~Oural (O)~~ Banquise (O)	1
		short	basse	niedrig	corta	~~Barbara (O)~~ Baladin (O)	3
		medium	moyenne	mittel	media	Hella (O)	5
		tall	haute	hoch	larga	~~Viking (F)~~ Melina (F)	7
		very tall	très haute	sehr hoch	muy larga		9
15.	**VG 79-81**	**Boll: anthocyanin coloration**					
QN		absent or weak					1
		medium					2
		strong					3
16. (*)	**VG 89-99**	**Boll: size**	**Capsule : taille**	**Kapsel: Größe**			
QN		very small				Mac Gregor (O)	1
		small	petite	klein		Lorea (F), ~~Gold Merchant (O)~~,	3
		medium	moyenne	mittel		~~Jupiter (O)~~	5
		large	grande	groß		Baskerville (O)	7
		very large				~~Agristar (O),~~ Biltstar (O)	9
17. (*) (+)	**VG 99**	**Boll: ciliation of false septa**	**Capsule : ciliation des fausses cloisons**	**Kapsel: Bewimperung der Kapselscheide**			
QL		absent	absente	fehlend		Escalina (F), Laser (O)	1
		present	présente	vorhanden		~~Mikael (F),~~ Baikal (O)	9

		English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
18.	**~~VG~~/MS 99**	**Boll: length ~~(at longest part)~~**					
(+)							
QN	**(b)**	very short				Drakkar (F)	1
		short				Hermes (F)	3
		medium				Escalina (F)	5
		long				Violin (F)	7
		very long				Eden (F)	9
19.	**~~VG~~/MS 99**	**Boll: width ~~(at widest part)~~**					
(+)							
QN	**(b)**	very narrow					1
		narrow				Electra (F)	3
		medium				Hermes (F)	5
		broad				~~Viking (F),~~Agatha (F)	7
		very broad				Liviola (F)	9
20.	**~~VG~~/MS 99**	**Boll: ratio length/width**	*DE : to combine char 19 and 20 and to read Boll : width in relation to length*				
QN	**(b)**	very compressed				Drakkar (F)	1
		moderately compressed				Diane (F)	3
		medium				~~Viking (F),~~ Ilona (F)	5
		moderately elongated				Melina (F)	7
		very elongated				Violin (F)	9

		English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
21. (*) (+)	**~~VG/~~MS 99**	**Stem: length from cotyledon scar to first branch**					
QN		very short	très courte	sehr niedrig	muy corta	Abacus (F)	1
		short	courte	niedrig	corta	Eole (O)	3
		medium	moyenne	mittel	media	Mac Gregor (O)	5
		long	longue	hoch	larga	Agatha (F)	7
		very long	très longue	sehr hoch	muy larga	Drakkar (F)	9
22. (+)	**MS 99**	**Stem: length from cotyledon scar to top boll**					
QN		very short	très courte	sehr niedrig	muy corta		1
		short	courte	niedrig	corta	~~Barbara (O)~~	3
		medium	moyenne	mittel	media	Hella (O)	5
		long	longue	hoch	larga	~~Viking (F)~~	7
		very long	très longue	sehr hoch	muy larga	Alizee (F)	9
23.	**MG 99**	**Seed: weight per 1000 seeds**	**Graine : poids de 1000 grains**	**Korn: 1000-Korngewicht**			
QN		very low	très petit	sehr gering		Ingot (O), Marylin (F)	1
		low	petit	gering		Oliver (O)	3
		medium	moyen	mittel		Talon (O)	5
		high	grand	hoch		Juliet (O)	7
		very high	très grand	sehr hoch		Master (O)	9
24. (*)	**VG 99**	**Seed: color**	**Graine : couleur**	**Korn: Farbe**			
PQ		green : *FR : to be deleted (no example). DE : to be deleted*	verte	Grün			1
		yellow	jaune	gelb		Windermere (O)	2
		brown	brun	braun		Escalina (F), Oliver (O)	3

		English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
25.	**MS 99**	**Seed: length ~~(at longest range)~~**	*To check if 9 notes is appropriate.*	*FR : to be deleted* *CZ : to be deleted*			
QN		very short		*DE : do not support char on seed size in addtion to TSW. Ask for data on the reliability.*			1
		short					3
		medium		*UK : no data about correlation between seed size and TSW. In favour to keep*			5
		long		*NL : in favour to keep. Measured by IA. Data available for discriminative power*			7
		very long					9
26.	**MS 99**	**Seed : width ~~(at widest range)~~**	*To check if 9 notes is appropriate.*	*FR : to be deleted*			
QN		very narrow		*CZ : to be deleted.*			1
		narrow		*DE : do not support char on seed size in addtion to TSW. Ask for data on the reliability.*			3
		medium		*UK : no data about correlation between seed size and TSW. In favour to keep.*			5
		broad		*NL : in favour to keep.Measured by IA*			7
		very broad					9

		English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
27.	**MS 99**	**Seed: ratio length/width**	*To check if 9 notes is appropriate.*	*FR : to be deleted*			
QN		very compressed		*CZ : to be deleted*			1
		moderately compressed		*DE : do not support char on seed size in addtion to TSW. Ask for data on the reliability..*			3
		medium		*UK : no data about correlation between seed size and TSW. In favour to keep*			5
		moderately elongated		*NL : in favour to keep.Measured by IA*			7
		very elongated					9
~~**28.**~~	~~**MS 61-65**~~	~~**Leaf: Length of the first leaf below the branches**~~	*FR : to be deleted*				
~~**QN**~~		~~short~~	*DE: to be deleted*				1
		~~medium~~	*CZ : no data. Keep only if data on discriminative power*				2
		~~long~~					3
~~**29.**~~	~~**MS 61-65**~~	~~**Leaf: width of the first leaf below the branches**~~	*FR : to be deleted*				
~~**QN**~~		~~narrow~~	*DE: to be deleted*				1
		~~medium~~	*CZ : no data. Keep only if data on discriminative power*				2
		~~broad~~					3

		English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
~~**30.**~~	~~**MS 61-65**~~	~~**Leaf: Ratio length/width**~~	*FR : to be deleted*				
~~**QN**~~		~~compressed~~	*DE: to be deleted*				1
		~~medium~~	*CZ : no data. Keep only if data on discriminative power*				2
		~~elongated~~					3

8. Explanations on the Table of Characteristics

8.1 Explanation for grouping characteristics

For the grouping characteristic 21:

Three groups a), b), c) are defined, two distinct groups at the extremes of the scale and an intermediate group:

a.) Note 1 – 3 = short type varieties
b.) Note 7 – 9 = long type varieties
c.) Note 4 – 6 = medium type varieties

Candidate varieties being described as under a.) would not need to be grown in group b.)
Candidate varieties being described as under b.) would not need to be grown in group a.)
Candidate varieties being described as under c.) would need to be grown
in group a.) if their note of expression is 4 or 5
in group b.) if their note of expression is 5 or 6

8.2 Explanation covering several characteristics

(a) To be observed on fresh fully opened flowers

(b) Characteristics used for group 2 and group 3 varieties only

The definition of the varieties group 1, 2 and 3 is a combination of characteristic 21 *(Stem: length from cotyledon scar to first branch)* and characteristic 24 *(Seed: colour).*

Char 21 / Char. 24		short type			medium type			long type		
		1	2	3	4	5	6	7	8	9
~~green~~	~~1~~	~~?~~			~~?~~			~~?~~		
yellow	2	Group 1			Group 1			no variety		
brown	3	Group 1			Group 1	**Group 2**	**Group 3**	**Group 3**		

Proposition from DE and NL : to replace the paragraph (b) and the table by :
(b) To be observed for long and medium type varieties with brown seed color only.

Based on characteristic 21 (Stem: length from cotyledon scar to first branch), varieties are classified in short type varieties (Note 1-3), medium type varieties (Note 4-6) and long type varieties (Note 7 – 9). The observation of petal length, petal width, boll length and boll width is not appropriate for short type varieties and for varieties with yellow seed color.
(DE: If note 4 shall not be included in the measurements, than the medium type should be restricted to note 5).

8.3 Explanations for individual characteristics

Ad. 1: Petal: color of crown at bud stage

1
white

3
violet

4
blue violet

2
pink

(*FR : To add pink next year)*

Ad. 2: Time of beginning of flowering

Beginning of flowering = first flower open on 10% of plants

Ad. 3: Flower: shape of corolla

1
circular

2
circular to pentagonal

3
pentagonal

Ad. 5: Flower: size of corolla

The measured size is the diameter of the corolla.

Ad. 9: Only varieties with colored corolla: Flower: shape of corolla's heart

1
round

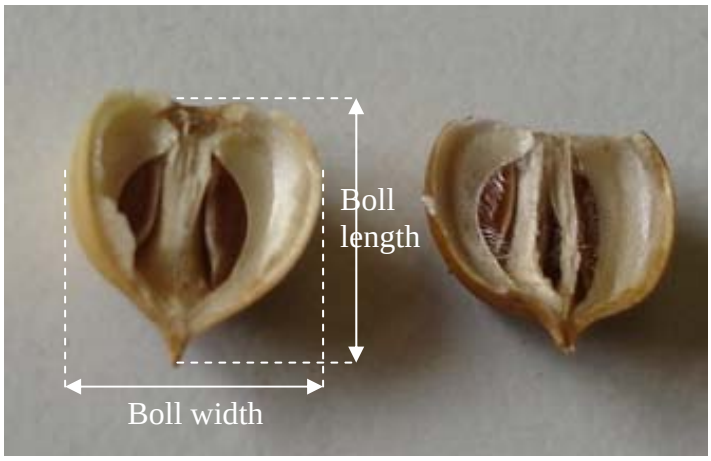
2
round to pentagonal

3
pentagona

Ad. 15: Plant: natural height

Should be measured on the plot including lateral branches (at time of flowering).

Ad. 16: Ciliation of false septa
Ad. 17: Boll: length (~~at longest part~~)
Ad. 18: Boll: width ~~(at widest part)~~



1
absent

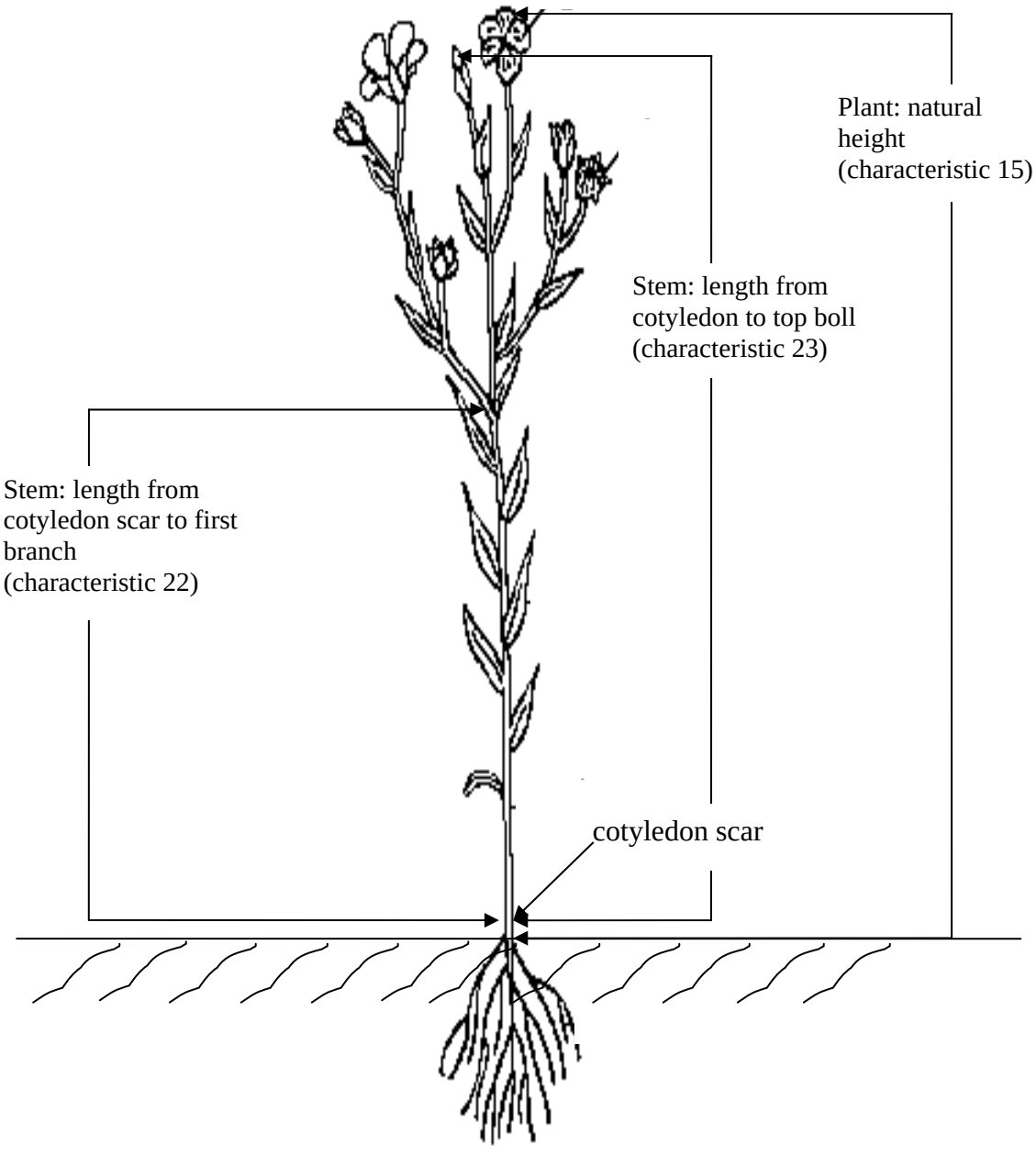
9
present

Ad. 22: Stem: length from cotyledon scar to first branch

Should be measured on the main stem from cotyledon scar to first branch ~~on harvested plants~~.

Ad. 23: Stem: length from cotyledon scar to top boll

Should be measured on the main stem from cotyledon scar to top boll ~~on harvested plants~~.



~~Ad 25: Seed : length~~
~~Should be observed at longest part~~

~~Ad 26 : Seed width~~
~~Should be observed at broadest part~~

~~Ad 26 : Sepal dotting~~
~~Czech Republic to provide photograph~~

8.4 Growth stages of Linum usitatissimum *L. adapted to the BBCH scale applicable to individual plant*

Stage 0	Germination
00	Dry seed
01	Beginning of seed imbibition
05	Radicle (root) emerged from seed
09	Emergence, Coleoptiles breaks through soil surface
Stage 1	Leaf development (main shoot)
11	First true leaf unfolded
12	Two true leaves unfolded
15	Five true leaves unfolded
..	Stages continuous till stage 19
Stage 3	Stem elongation, shoot development (main shoot)
31	Stem 10% of final length (diameter)
32	Stem 20% of final length (diameter)
..	Stages continuous till maximum stem length at stage 39
Stage 5	Inflorescence emergence (main shoot)/heading
51	Flower buds visible
55	First individual flowers visible (still closed)
59	First flower petals visible
Stage 6	Flowering (main shoot)
60	First flowers open (sporadically)
61	Beginning of flowering: 10% of flowers open
65	Full flowering: 50% of flowers open
69	End of flowering: fruit set visible
Stage 7	Development of bolls
71	10% of bolls have reached final size
75	50% of bolls have reached final size
79	Nearly all bolls have reached final size
Stage 8	Ripening or maturity of fruit and seed
81	Beginning of ripening or boll colouration
85	Sepals and bolls yellow coloured
89	Fully ripe, boll and seed show fully ripe colour
Stage 9	Senescence
99	Harvested plants and/or seeds

9. Literature

Anonyme, 1969: Le lin au service des hommes, sa vie, ses techniques, son histoire. Editions J-B Baillière et Fils. Paris, FR

Anselme, CI, 1956: Les variétés de lin, leurs principales maladies cryptogamiques. INRA, (Institut National de la Recherche Agronomique). Paris, FR

Marshall, G., Editor, 1988: « Flax: Breeding and utilisation » Proceedings of the EEC Flax Workshop held in Brussels, Belgium, May 4-5 1998, sponsored by the Commission of the European Communities, Directorate-General for agriculture, Kluwer Academic Publishers, BE

Meier U., 1997: Growth stages of mono- and dicotyledonous plants: BBCH-Monograph. Wien Federal Biological Research Center for Agriculture and Forestry, Blackwell Wissenschafts-Verlag, Berlin, DE

Plonka, F., 1956: Les variétés de lin. INRA (Institut National de la Recherche Agronomique). Paris, FR

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	*Linum usitatissinum* L.
1.2 Common name	Flax, Linseed

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)

(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)

[#] 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) population [ ]
(ii) synthetic variety [ ]

(c) Hybrid [ ]

(d) Other [ ]
(please provide details)

4.2.2 Vegetatively propagated varieties

(a) cuttings [ ]

(b) *in vitro* propagation [ ]

(c) other (state method) [ ]
[... ... ...]

4.2.3 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 (4)	**Flower : color of the corolla (~~when fully opened~~)**		
	white	Belinka (F), Laser (O)	1[…]
	pink	Petra (O)	2[…]
	red violet	~~Adelie (F), Olinette (O)~~	3[…]
	violet	~~Viola (F),~~ Hungarian Gold (O)	4[…]
	blue violet	Hermes (F), Niagara (O)	5[…]
	medium blue	Escalina (F), ~~Barbara (O)~~	6[…]
	light blue	Melina (F), Biltstar (O)	7[…]
5.2 (17)	**Boll: ciliation of false septa**		
	absent	Escalina (F), Laser (O)	1[…]
	present	~~Mikael (F),~~ Baikal (O)	9[…]
5.4 (21)	**Stem: length from cotyledon scar to first branch**		
	very short	Abacus (F)	1[…]
	short	Eole (O)	3[…]
	medium	Mac Gregor (O)	5[…]
	long	Agatha (F)	7[…]
	very long	Drakkar (F)	9[…]
5.3 (24)	**Seed: color**		
	green		1[…]
	yellow	Windermere (O)	2[…]
	brown	Escalina (F), Oliver (O)	3[…]

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	Denomination(s) of variety(ies) similar to your candidate variety	Denomination(s) of variety(ies) similar to your candidate variety	Denomination(s) of variety(ies) similar to your candidate variety
Example	[to be provided]		

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

7.3.1 Main use

(a) Fibre [ ]
(b) Oil [ ]
(c) Fibre and Oil [ ]
(please provide details)

7.3.2 Time of sowing

(a) winter [ ]
(b) spring [ ]

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 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]