TG/85/7(proj.1)
ORIGINAL: English
DATE: 2007-05-11

UPOV

INTERNATIONAL UNION FOR THE PROTECTION OF NEW VARIETIES OF PLANTS

GENEVA

DRAFT

[*]

LEEK

UPOV Code: ALLIU_POR

Allium porrum L.

GUIDELINES

FOR THE CONDUCT OF TESTS

FOR DISTINCTNESS, UNIFORMITY AND STABILITY

prepared by experts from the Netherlands

to be considered by the Technical Working Party for Vegetables
at its forty-first session, to be held in Nairobi, Kenya, from June 11 to 15, 2007

Alternative Names:[*]

Botanical name	*English*	*French*	*German*	*Spanish*
Allium porrum L.	Leek	Poireau	Porree	Puerro

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.]

TABLE OF CONTENTS PAGE

1. Subject of these Test Guidelines

These Test Guidelines apply to all varieties of *Allium porrum* 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 in the case of seed-propagated varieties, or in the form of plants in the case of vegetatively propagated varieties.

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

75 g or 13000 seeds in the case of seed-propagated varieties, or
75 plants of normal transplantation size in the case of vegetatively propagated varieties.

2.4 In the case of seed, the seed should meet the minimum requirements for germination, species and analytical purity, health and moisture content, specified by the competent authority.

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 Number of Growing Cycles

3.1.1 In the case of seed, the minimum duration of tests should normally be two independent growing cycles.

3.1.2 In the case of plants, the minimum duration of tests should normally be a single growing cycle. If distinctness and/or uniformity cannot be sufficiently examined in a single growing cycle, the test should be extended to a second growing cycle.

3.2 Testing Place

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

3.3 Conditions for Conducting the Examination

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

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

MG: single measurement of a group of plants or parts of plants
MS: measurement of a number of individual plants or parts of plants
VG: visual assessment by a single observation of a group of plants or parts of plants
VS: visual assessment by observation of individual plants or parts of plants"

3.4 Test Design

3.4.1 In the case of seed-propagated varieties, each test should be designed to result in a total of at least 200 plants divided between two or more replicates. In the case of vegetatively propagated varieties, each test should be designed to result in a total of at least 60 plants.

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 should be made on 60 plants or parts taken from each of 60 plants.

3.6 Additional Tests

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

4. Assessment of Distinctness, Uniformity and Stability

4.1 Distinctness

4.1.1 General Recommendations

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

4.1.2 Consistent Differences

The differences observed between varieties may be so clear that more than one growing cycle is not necessary. In addition, in some circumstances, the influence of the environment is not such that more than a single growing cycle is required to provide assurance that the differences observed between varieties are sufficiently consistent. One

means of ensuring that a difference in a characteristic, observed in a growing trial, is sufficiently consistent is to examine the characteristic in at least two independent growing cycles.

4.1.3 Clear Differences

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

4.2 Uniformity

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

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

4.2.3 The assessment of uniformity for hybrid varieties depends on the type of hybrid and should be according to the recommendations for hybrid varieties in the General Introduction.

4.2.4 For the assessment of vegetatively propagated varieties, a population standard of 1% and an acceptance probability of at least 95% should be applied. In the case of a sample size of 60 plants, 2 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.

(a) Test Guidelines covering seed-propagated and vegetatively propagated varieties

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 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:

Growing season
Plant: length (characteristic 2)
Leaf blade: width (characteristic 6)
Leaf blade: color (characteristic 7)
Shaft: length (characteristic 12)
Shaft: bulb formation (characteristic 15)

ISF comment (MVB):
7. Leafblade color is proposed as a grouping characteristic.
As Leafblade color is influenced by fertilization, climatically conditions and maturity.
Due to these reasons we do object against the proposal to make/keep Leafblade color as a grouping characteristic.
NL: Leaf blade color is influenced by the above, but is equally influenced. In leek there are almost only quantitative and pseudoqualitative characteristics, which makes grouping already difficult, so the proposal is to keep this characteristic.

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 3.3.2

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

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

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/ MS**	**Plant: height**					
QN	**(a)**	very short				De Carentan 2	1
		short				D'Hiver de Saint Victor	3
		medium				Bleu de Solaise	5
		tall				~~Hafnia,~~Long géant du Verdet, Kingston	7
add		very tall				Bulgaarse Reuzen	9
2. **(*)** **(+)**	**VG/ MS**	**Plant: length**					
QN	**(a)**	very short					1
		short				De Carentan 2	3
		medium				Bleu de Solaise, Jaune gros du Poitou	5
		long				~~Kong Richard~~, Rese, Titan, Kingston	7
		very long				Bulgaarse Reuzen	9
NL: Proposal to delete char. 3 (Plant:density of leaves), because little variability between and within types (especially hybrids).							
4. **(+)**	**VG**	**Foliage: attitude**					
QN	**(a)**	erect				Rese	1
		semi-erect				Linx, Upton	3
		horizontal				Jaune gros du Poitou, De Carentan 2, D'Elbeuf	5

		English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
New (i)	**VG**	**Leaf blade: bending**					
(+)							
QN	**(b)**	weak				Lampton, Bell	3
		medium				Flextan, Linx	5
		strong				Bulgaarse Reuzen, Blauwgroene Winter	7
5. **(+)**	**VG/ MS**	**Leaf blade: length of longest blade**					
QN	**(b)**	short				Conora, D'Elbeuf, Kalmar, De Carentan 2, Artemis	3
		medium				~~Carlton~~, Porridor, Rese, Flextan	5
		long				~~Arial~~, Kong Richard, Maxim, Kingston	7
6. **(*)**	**VG/ MS**	**Leaf blade: width**					
QN	**(b)**	narrow				Rustic, Lampton	3
		medium				De Liège	5
		broad				Jaune gros du Poitou, Rese, Striker	7
7. **(*)**	**VG**	**Leaf blade: color**					
PQ	**(b)**	yellow-green				Jaune gros du Poitou	1
		green				Premier	2
		grey-green				Zwitserse Reuzen	3
		blue-green				Libertas, Olaf , Porridor, Blauwgroene Winter	4

		English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
8.	**VG**	**Leaf blade: intensity of color**					
QN	**(b)**	light				~~Gros long d'été 2, Rese~~	3
		medium				~~D'Hiver de Saint Victor~~	5
		dark					7
9. **(+)**	**VG**	**Leaf blade: anthocyanin coloration**					
QN	**(b)**	absent or very weak				Jaune gros du Poitou	1
		weak				Azur	3
		medium					5
		strong				Nepal	7
		very strong				D'Hiver de Saint Victor	9
10.	**VG**	**Leaf blade: waxiness**					
QN	**(b)**	absent or very weak				Jaune gros du Poitou, Kingston	1
		weak				Gros long d'été 2, Rese, Carlton	3
		medium				D'Elbeuf, Linx	5
		strong				Bleu de Solaise, Flextan	7
		very strong					9

NL: Proposal to delete char. 11 (Leaf blade: grooving), because too much variability even within one variety .

		English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
12. (*) (+)	**VG/ MS**	**Shaft: length**					
QN	**(c)**	very short					1
		short				Artemis, Bleu de Solaise, D'Hiver de Saint Victor	3
		medium				Gros long d'été 2	5
		long				Maxim, Lampton	7
		very long				Kong Richard, Kingston	9

ISF comment: shaft length greatly depends on how deep you plant the plantlet.

NL: all plantlets should be planted at the same level and not too deep in the soil. Furthermore no earthing up should be done. This could be added in chapter 3.3.

13. (*) (+)	**VG/ MS**	**Shaft: diameter**					
QN	**(c)**	very small					1
		small				Titan, Lampton	3
		medium				Géant précoce	5
		large				Premier, Zwitserse Reuzen	7
		very large				Jaune gros du Poitou	9
14. (+)	**VG**	**Shaft: ratio length/ diameter**					
QN	**(c)**	small				D'Hiver de Saint Victor	3
		medium				Gros long d'été 2, Easton	5
		large				Bulgaarse Reuzen	7

		English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
15. (*)	**VG**	**Shaft: bulb formation**					
QN	**(c)**	absent or very weak				Jolant, Roxton, Striker	1
		weak				Hafnia, Titan, Lampton, Linx	3
		medium				Bleu de Solaise, Premier	5
		strong				Artemis, Jaune gros du Poitou	7
		very strong				Carentan 2	9
16. (+)	**VG**	**Shaft: narrowing towards base**					
QL	**(c)**	absent				Herfstreuzen 2	1
		present				Lavi, Rese, Titan	9
New (ii) (+)	**VG**	**<u>Vegetatively propagated varieties only</u>: length of spathe**					
		short					3
		medium					5
		long					7
17. (+)	**VG**	**<u>Vegetatively propagated varieties only</u> : Flower: color**					
QL	**(d)**	white				~~Alma~~	1
		pink					2
		violet					3
18. (*)	**VG**	**<u>Vegetatively propagated varieties only</u>: Flower: male sterility**					
QL	**(d)**	absent					1
		present					9

	English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
New (iii) (+) VG	**Vegetatively propagated varieties only: Flowering plant: height**					
	short					3
	medium					5
	tall					7

8. Explanations on the Table of Characteristics

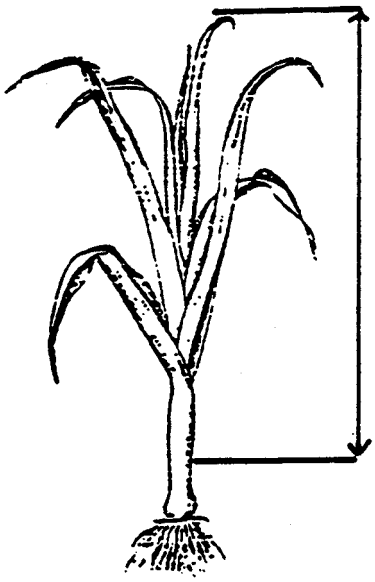
8.1 Explanations covering several characteristics

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

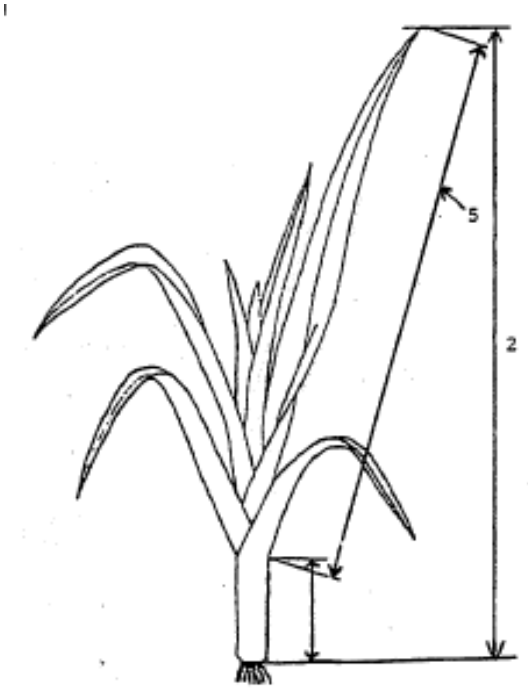
(a) Plant: All observations should be made at harvest maturity.
(b) Leaf blade: All observations on leaf blade should be made on the fully developed leaf.
(c) Shaft: All observations should be made at harvest maturity
(d) Flower: All observations on the flower should be made at full flowering, because when the flower gets older, the color will faint.

8.2 Explanations for individual characteristics

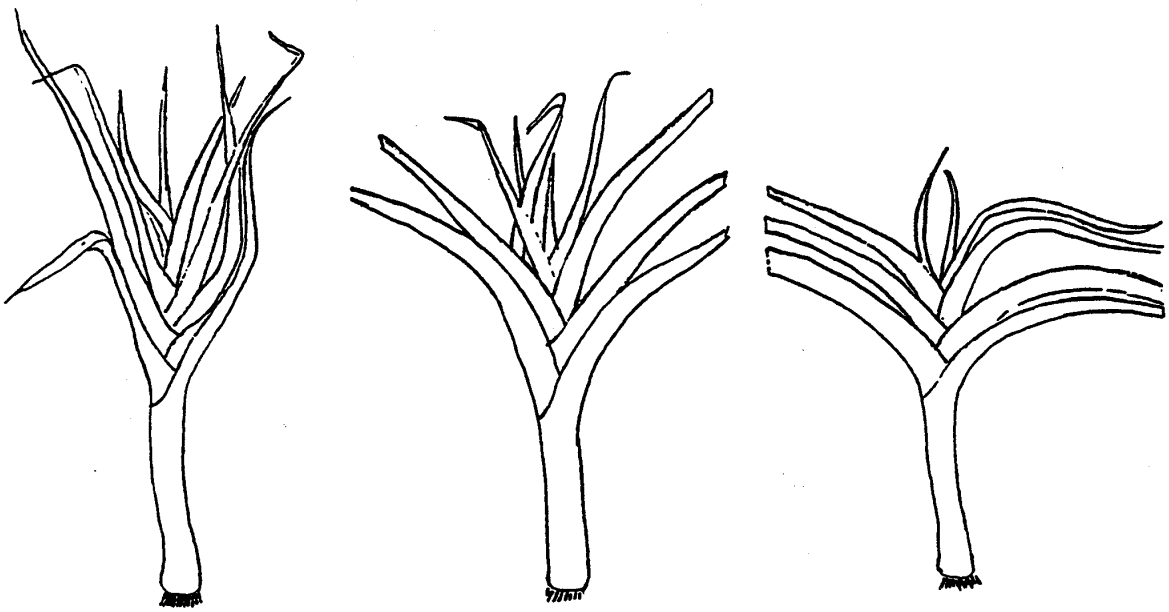
Ad. 1: Plant: height



Ad. 2: Plant: length
Ad. 5: Leaf blade: length of longest blade
Ad. 12: Shaft: length



Ad. 4: Foliage: attitude



1
erect

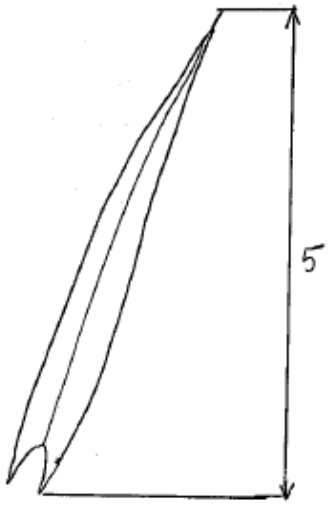
3
semi-erect

5
horizontal

Ad new I: Leaf blade: bending

1	5	7
weak	medium	strong

Ad 5: Leaf blade: length of longest blade

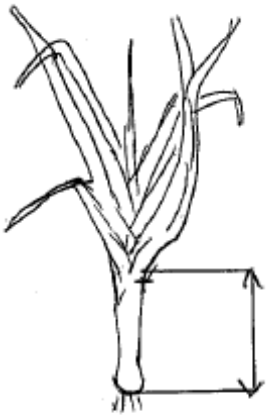


Ad 9: Leaf blade: anthocyanin coloration

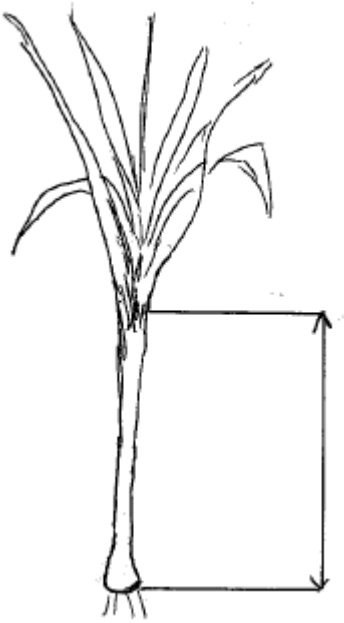
To be observed after a period of night frost.

Ad 13: Shaft: ratio length/diameter

3
small

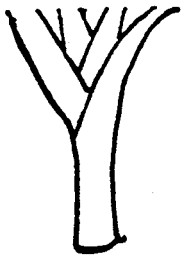


5
medium

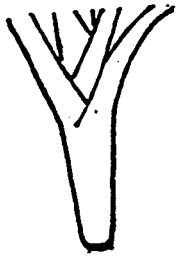


7
large

Ad. 16: Shaft: narrowing towards base



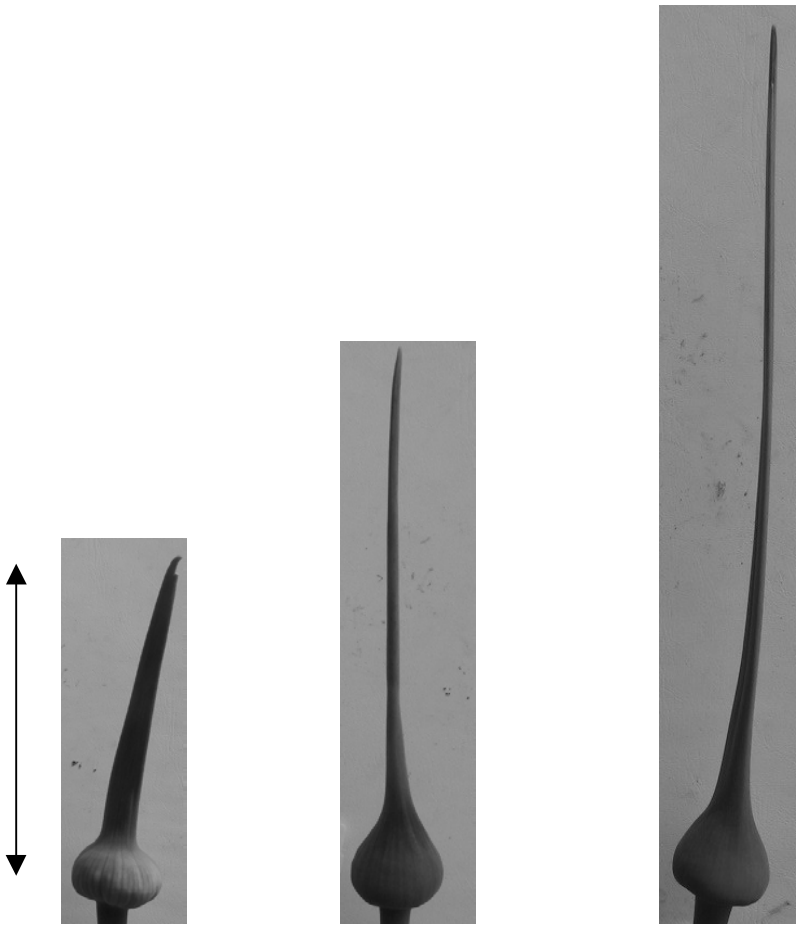
1
absent



9
present

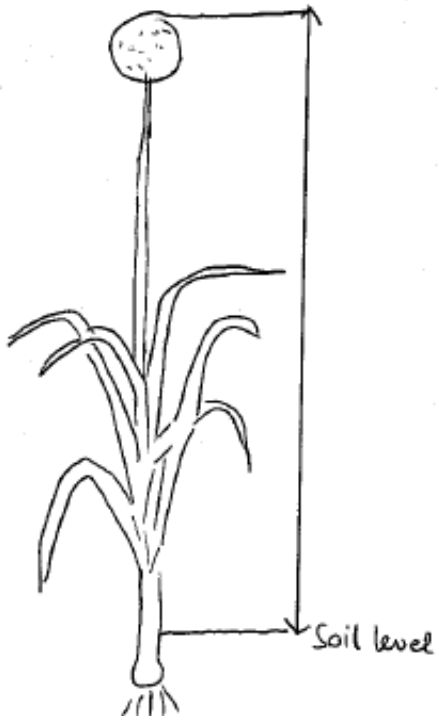
Ad. New (ii): vegetatively propagated varieties only: length of spathe

To be observed at the green, fully developed spathe, before it starts to open and desiccate



3	5	7
short	medium	long

Ad. New (iii) : vegetatively propagated varieties only: Flowering plant: height



9. Literature

Bonnet, B., 1976: "Le poireau (*Allium porrum* L.): Aspects botaniques et agronomiques" - revue bibliographique. Saussurea 7. 175-194

Currah, L., 1986: "Leek breeding: A review." Review Article. Journal of Horticultural Science 61. (4) 407-415

Jones, H.A. and Mann, L.K., 1963: "Onions and Their Allies: Botany, Cultivation and Utilisation", London, Leonard Hill

Rabinowitch, H. D. and Brewster, J. L., 1990: "Onions and Allied Crops", Vol. 1-3, CRC Press, Boca Raton

Schweisguth, B., 1970: "Études préliminaires a l'amélioration du poireau *A. porrum* L." Proposition d'une méthode d'amélioration. Annales de l'Amélioration des Plantes. 20. 215-231

Schweisguth B., 1973: "Étude de l'hérédité de trois caractères quantitatifs chez le poireau (*Allium porrum* L.)." Annales de l'Amélioration des Plantes. 23. 45-57

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

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

1. Subject of the Technical Questionnaire

1.1 Botanical name	*Allium porrum* L.
1.2 Common name	Leek

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) Cross-pollination [ ]

(b) Hybrid [ ]
based on one clonal parent [ ]
based on two clonal parents [ ]

(c) Other [ ]
(please provide details)"

4.2.2 Vegetatively propagated varieties

(a) cuttings [ ]

(b) *in vitro* propagation [ ]

(c) other (state method) [ ]

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

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

	Characteristics	Example Varieties	Note
5.1 (2)	**Plant: length**		
	very short		1[ ]
	short	De Carentan 2	3[ ]
	medium	Bleu de Solaise, Jaune gros du Poitou	5[ ]
	long	~~Kong Richard~~, Rese, Titan, Kingston	7[ ]
	very long	Bulgaarse Reuzen	9[ ]
5.2 (6)	**Leaf blade: width**		
	narrow	Rustic, Lampton	3[ ]
	medium	De Liège	5[ ]
	broad	Jaune gros du Poitou, Rese, Striker	7[ ]
5.3 (7)	**Leaf blade: color**		
	yellow-green	Jaune gros du Poitou	1[ ]
	green	Premier	2[ ]
	grey-green	Zwitserse Reuzen	3[ ]
	blue-green	Libertas, Olaf , Porridor, Blauwgroene Winter	4[ ]
	~~**Leaf blade: anthocyanin coloration**~~		

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

	Characteristics	Example Varieties	Note
5.4 (12)	**Shaft: length**		
	very short		1[ ]
	short	Artemis, Bleu de Solaise, D'Hiver de Saint Victor	3[ ]
	medium	Gros long d'été 2	5[ ]
	long	Maxim, Lampton	7[ ]
	very long	Kong Richard, Kingston	9[ ]
5.5 (15)	**Shaft: bulb formation**		
	absent or very weak	Jolant, Roxton, Striker	1[ ]
	weak	Hafnia, Titan, Lampton, Linx	3[ ]
	medium	Bleu de Solaise, Premier	5[ ]
	strong	Artemis, Jaune gros du Poitou	7[ ]
	very strong	Carentan 2	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

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 Growing season

(a)	spring	[ ]
(b)	summer	[ ]
(c)	autumn	[ ]
(d)	winter	[ ]

ISF: (MVB/MB)
As within all other species we do also object against the obligation for a "representative color photograph of the variety

A representative color photograph of the variety should accompany the Technical Questionnaire.

[#] 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]