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INTERNATIONAL UNION FOR THE PROTECTION OF NEW VARIETIES OF PLANTS

Geneva

DRAFT

GARLIC

UPOV Code(s): ALLIU_SAT

Allium sativum L.

to check whether to restrict the TG to existing vegetatively propagated varieties only and exclude seed-propagated varieties

GUIDELINES

FOR THE CONDUCT OF TESTS

FOR DISTINCTNESS, UNIFORMITY AND STABILITY

prepared by an expert from France

~~to be~~ considered by the

Technical Working Party for Vegetables at its sixtieth session,
to be held in Pacific Grove, California, United States of America from 2026-05-18 to 2026-05-21

Disclaimer: this document does not represent UPOV policies or guidance

Alternative Names:*

Botanical name	*English*	*French*	*German*	*Spanish*
Allium sativum L.	Garlic	Ail	Knoblauch	Ajo

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 3
2. MATERIAL REQUIRED 3
3. METHOD OF EXAMINATION 3
3.1 Number of Growing Cycles 3
3.2 Testing Place 3
3.3 Conditions for Conducting the Examination 3
3.4 Test Design 3
3.5 Additional Tests 4
4. ASSESSMENT OF DISTINCTNESS, UNIFORMITY AND STABILITY 4
4.1 Distinctness 4
4.2 Uniformity 5
4.3 Stability 5
5. GROUPING OF VARIETIES AND ORGANIZATION OF THE GROWING TRIAL 5
6. INTRODUCTION TO THE TABLE OF CHARACTERISTICS 6
6.1 Categories of Characteristics 6
6.2 States of Expression and Corresponding Notes 6
6.3 Types of Expression 6
6.4 Example Varieties 6
6.5 Legend 7
7. TABLE OF CHARACTERISTICS/TABLEAU DES CARACTERES/MERKMALSTABELLE/TABLA DE CARACTERES 8
8. EXPLANATIONS ON THE TABLE OF CHARACTERISTICS ..... 17~~18~~
8.1 Explanations covering several characteristics ..... 17~~18~~
8.2 Explanations for individual characteristics ..... 17~~18~~
9. LITERATURE ..... 28~~30~~
10. TECHNICAL QUESTIONNAIRE ..... 29~~31~~

1. Subject of these Test Guidelines

These Test Guidelines apply to all varieties of *Allium sativum* 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 bulbs free from virus in the case of ~~vegetative~~vegetatively propagated varieties.
.

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

Seed-propagated varieties: 7,500 seeds, or
~~Vegetative~~Vegetatively propagated varieties: 60 bulbs

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.

In the case of bulbs, the plant material should at least meet the minimum requirements for sprouting capacity, moisture content and purity ~~for marketing plant material in the country in which the application is made.~~ , specified by the competent authority.

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

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

3.1.2 The two independent growing cycles should be in the form of two separate plantings.

3.1.3 The testing of a variety may be concluded when the competent authority can determine with certainty the outcome of the test.

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

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 In the case of seed propagated varieties, each test should be designed to result in a total of at least 200 plants, which should be divided between at least 2 replicates.

3.4.2 In the case of vegetative propagated varieties, each test should be designed to result in a total of at least 100 plants, which should be divided between at least 2 replicates.

3.4.3 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.

3.4.4 The storage conditions of bulbs could have an impact on the expression of characteristics. It is recommended to perform observations on material propagated and stored in similar conditions. Separate plots for visual observation and for measuring can only be used if they have been subject to similar environmental conditions.

3.5 Additional Tests

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

4. Assessment of Distinctness, Uniformity and Stability

4.1 Distinctness

4.1.1 General Recommendations

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

4.1.2 Consistent Differences

The differences observed between varieties may be so clear that more than one growing cycle is not necessary. In addition, in some circumstances, the influence of the environment is not such that more than a single growing cycle is required to provide assurance that the differences observed between varieties are sufficiently consistent. One means of ensuring that a difference in a characteristic, observed in a growing trial, is sufficiently consistent is to examine the characteristic in at least two independent growing cycles.

4.1.3 Clear Differences

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

4.1.4 Number of Plants or Parts of Plants to be Examined

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

In the case of ~~vegetative~~vegetatively propagated varieties, unless otherwise indicated, for the purposes of distinctness, all observations on single plants should be made on 30 plants or parts taken from each of 30 plants and any other observation made on all plants in the test, disregarding any off-type plants.

4.1.5 Method of Observation

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

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

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

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

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

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

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

4.2 Uniformity

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

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

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

~~4.2.4 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.~~

~~4.2.5~~ 4.2.3 For the assessment of uniformity of ~~vegetative~~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 100 plants, 3 off-types are allowed.

~~4.2.6 For the assessment of uniformity of inbred lines varieties and hybrid varieties, a population standard of 2% and an acceptance probability of at least 95 % should be applied. In the case of a sample size of 200 plants, 7 off-types are allowed.~~

4.3 Stability

4.3.1 In practice, it is not usual to perform tests of stability that produce results as certain as those of the testing of distinctness and uniformity. However, experience has demonstrated that, for many types of variety, when a variety has been shown to be uniform, it can also be considered to be stable.

4.3.2 Where appropriate, or in cases of doubt, stability may be further examined by testing a new seed or plant stock to ensure that it exhibits the same characteristics as those shown by the initial material supplied.

5. Grouping of Varieties and Organization of the Growing Trial

5.1 The selection of varieties of common knowledge to be grown in the trial with the candidate varieties and the way in which these varieties are divided into groups to facilitate the assessment of distinctness are aided by the use of grouping characteristics.

5.2 Grouping characteristics are those in which the documented states of expression, even where produced at different locations, can be used, either individually or in combination with other such characteristics: (a) to select varieties of common knowledge that can be excluded from the growing trial used for examination of distinctness; and (b) to organize the growing trial so that similar varieties are grouped together.

5.3 The following have been agreed as useful grouping characteristics:

(a) Leaf blade: green color (characteristic 3)
(b) Leaf blade: waxiness (characteristic 4)
(c) Pseudostem: flowering stem (characteristic 11)
(d) Only for varieties with Pseudostem: flowering stem present: length (characteristic ~~13~~12)
(e) Bulb: anthocyanin stripes on dry external scales (characteristic ~~23~~22)
(f) Clove: ground color of scale (characteristic ~~30~~29)
(g) Time of harvest maturity (characteristic ~~36~~35)
(h) End of dormancy of clove in bulb (characteristic ~~37~~36)

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

6. Introduction to the Table of Characteristics

6.1 Categories of Characteristics

6.1.1 Standard Test Guidelines Characteristics

Standard Test Guidelines characteristics are those which are approved by UPOV for examination of DUS and from which members of the Union can select those suitable for their particular circumstances.

6.1.2 Asterisked Characteristics

Asterisked characteristics (denoted by *) are those included in the Test Guidelines which are important for the international harmonization of variety descriptions and should always be examined for DUS and included in the variety description by all members of the Union, except when the state of expression of a preceding characteristic or regional environmental conditions render this inappropriate.

6.2 States of Expression and Corresponding Notes

6.2.1 States of expression are given for each characteristic to define the characteristic and to harmonize descriptions. Each state of expression is allocated a corresponding numerical note for ease of recording of data and for the production and exchange of the description.

6.2.2 All relevant states of expression are presented in the characteristic.

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

6.3 Types of Expression

An explanation of the types of expression of characteristics (qualitative, quantitative and pseudo-qualitative) is provided in the General Introduction.

6.4 Example Varieties

Where appropriate, example varieties are provided to clarify the states of expression of each characteristic.

6.5 Legend

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

1 Characteristic number

2 (*) sterisked characteristic – see Chapter 6.1.2

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

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

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

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

7 Not applicable

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

		English		français		deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
1.	**(*)**	**QN**	**VG**	**(+)**	**(a)**				
		Foliage: density **TO CHECK WHETHER TO REDUCE SCALE TO 5 NOTES**							
		very sparse						Ti Rouge	1
		very sparse to sparse							2
		sparse						Vacoa	3
		sparse to medium							4
		medium						Printanor	5
		medium to dense							6
		dense						Germidour	7
		dense to very dense							8
		very dense							9
2.	**(*)**	**QN**	**VG**	**(+)**	**(a)**				
		Foliage: attitude							
		erect						Jolimont, Vayo	1
		erect to semi-erect						Printanor	2
		semi-erect						Germidour	3
3.	**(*)**	**QN**	**VG**		**(a)**				
		Leaf blade: green color							
		very light							1
		~~very light to~~ light						Primor	2
		~~light~~						~~Primor~~	~~3~~
		~~light to medium~~							~~4~~
		medium						Messidrome	~~5~~3
		~~medium to dark~~							~~6~~
		dark						Germidour	~~7~~4
		~~dark to~~ very dark						~~Valdour~~	~~8~~5
		~~very dark~~							~~9~~
4.	**(*)**	**QN**	**VG**		**(a)**				
		Leaf blade: waxiness							
		absent or very weak							1
		weak						Sprint	2
		medium						Messidrome	3
		strong						Germidour	4
		very strong						Gayant, Printanor	5

		English		français		deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
5.	**(*)**	**QN**	**MS/VG**	**(+)**	**(a)**				
		Leaf blade: length							
		very short							1
		very short to short							2
		short						Vacoa	3
		short to medium							4
		medium						Gayant	5
		medium to long							6
		long						Sultop	7
		long to very long							8
		very long							9
6.	**(*)**	**QN**	**MS/VG**	**(+)**	**(a)**				
		Leaf blade: width							
		very narrow							1
		very narrow to narrow							2
		narrow						Vacoa	3
		narrow to medium							4
		medium						Printanor	5
		medium to broad							6
		broad						Germidour	7
		broad to very broad							8
		very broad							9
7.	**(*)**	**QN**	**VG**	**(+)**	**(a)**				
		Leaf blade: shape in cross section							
		strongly concave						Vacoa	1
		slightly concave						Precosem	2
		flat						Germidour	3
8.		**QN**	**VG**	**(+)**	**(a)**				
		Pseudostem: anthocyanin coloration ~~at base~~							
		absent or very weak						Printanor	1
		weak						Messidrome	2
		medium							3
		strong						Germidour	4
		very strong							5

		English		français		deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
9.	**(*)**	**QN**	**MS/VG**	**(+)**	**(a)**				
		Pseudostem: width ~~at base~~ TO CHECK WHETHER TO REDUCE SCALE TO 5 NOTES							
		very narrow							1
		very narrow to narrow							2
		narrow						Vacoa	3
		narrow to medium							4
		medium						Printanor	5
		medium to broad							6
		broad						Germidour	7
		broad to very broad							8
		very broad							9
10.		**QL**	**VG**	**(+)**	**(a)**				
		Pseudostem: production of bulblets							
		absent						Rose de Lautrec	1
		present						Germidour	9
11.	**(*)**	**QL**	**VG**		**(b)**				
		Pseudostem: flowering stem							
		absent						Germidour	1
		present						Rose de Lautrec	9
~~**12.**~~		~~**QL**~~	~~**VG**~~	~~**(+)**~~	~~**(b)**~~				
		~~**Only for varieties with Pseudostem: flowering stem present: curvature**~~							
		~~absent~~						~~Sultop~~	~~1~~
		~~present~~						~~Iberose, Precosem~~	~~9~~
~~13~~12.	**(*)**	**QN**	**MS/VG**	**(+)**	**(b)**				
		Only for varieties with Pseudostem: flowering stem present: length							
		very short							1
		short						Rose de Lautrec	2
		medium						Precosem	3
		long						Sultop	4
		very long							5

		English		français		deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
~~14~~13.	(*)	**QN**	**MS/VG**		**(c)**				
		Bulb: size							
		very small							1
		very small to small							2
		small						Vacoa	3
		small to medium							4
		medium						Printanor	5
		medium to large							6
		large						Messidrome	7
		large to very large							8
		very large							9
~~15~~14.	(*)	~~QN~~PQ	**VG**	**(+)**	**(c)**				
		Bulb: shape in longitudinal section							
		transverse narrow elliptic						Sprint	1
		transverse broad elliptic						Germidour	2
		circular							3
~~16~~15.		~~QN~~QL	**MS/VG**	**(+)**	**(c)**				
		Bulb: shape in cross section TO CHECK WHETHER REALLY QL AND WHETHER THIS CHAR. IS NEEDED OR COULD BE DESCRIBED BY DIFFERENT ASPECTS OF SHAPES							
		elliptic						Ti Rouge	1
		circular						Sprint	2
~~17.~~16	(*)	**QN**	**VG**	**(+)**	**(c)**				
		Bulb: position of root disc							
		recessed						Germidour	1
		at the same level						Rose de Lautrec	2
		protruded							3

		English		français		deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
~~18~~17.	(*)	**QN**	**VG**	**(+)**	**(c)**				
		Bulb: position of cloves at top of bulb **TO ADJUST EXAMPLE VARIETIES AND ILLUSTRATIONS IN 17 AND 18 TO CLARIFY THE DIFFERENCE BETWEEN THESE TWO CHARACTERISTICS**							
		inserted						Sprint	1
		at same level						Corail	2
		exerted						Germidour	3
~~19~~18.	(*)	**QN**	**VG**	**(+)**	**(c)**				
		Bulb: shape of base							
		depressed						Germidour	1
		flat						Printanor	2
		rounded							3
~~20~~19.	(*)	**QN**	**VG**	**(+)**	**(c)**				
		Bulb: compactness of cloves							
		very loose							1
		loose						Sprint	2
		medium						Germidour	3
		compact						Printanor	4
		very compact							5
~~21~~20.	(*)	**QN**	**VG**	**(+)**	**(c)**				
		Bulb: ground color of dry external scales							
		white						Aulxito, Printanor	1
		yellowish white						Jolimont, Vigor Supreme	2
~~22~~21.		**QN**	**VG**	**(+)**	**(c)**				
		Bulb: anthocyanin area on dry external scales							
		absent or very small						Jolimont, Messidrome	1
		small						Ti Rouge	2
		medium						Germidour	3
		large							4
		very large							5

		English		français		deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
~~23~~22.	(*)	**QN**	**VG**		(c)				
		Bulb: anthocyanin stripes on dry external scales							
		absent or weak						Aulxito, Printanor	1
		medium						Germidour	2
		strong							3
~~24~~23.		**QN**	**VG**	**(+)**	**(c)**				
		Bulb: skin adherence of dry external scales							
		very weak							1
		weak						Sprint	2
		medium						Messidrome	3
		strong						Gayant, Printanor	4
		very strong							5
~~25~~24.		**QN**	**MS/VG**		**(c)**				
		Bulb: thickness of dry external scales							
		very thin							1
		thin						Sprint	2
		medium						Gayant	3
		thick						Jolimont	4
		very thick							5
~~26~~25.	(*)	**QN**	**MS/VG**	**(+)**	**(c)**				
		Bulb: number of cloves							
		very few						Dangiai	1
		few						Nevasem	2
		medium						Printanor	3
		many						Plamegar	4
		very many							5
~~27~~26.	(*)	**QL**	**VG**	**(+)**	**(c)**				
		Bulb: distribution of cloves							
		radial						Rose de Lautrec, Sprint	1
		non-radial						Jolimont, Messidrome	2
~~28~~27.	(*)	**QL**	**VG**	**(+)**	**(c)**				
		Bulb: external cloves							
		absent						Sprint, Sultop	1
		present						Messidor	9

		English		français		deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
~~29~~28.	(*)	**QN**	**MS/VG**	**(+)**	**(c)**				
		Clove: size							
		very small							1
		veru small to small							2
		small						Rose de Lautrec	3
		small to medium							4
		medium						Printanor	5
		medium to large							6
		large						Germidour	7
		large to very large							8
		very large							9
~~30~~29.	(*)	**PQ**	**VG**	**(+)**	**(c)**				
		Clove: ground color of scale							
		white							1
		yellowish white						Messidrome	2
		pink						Printanor	3
		purple							4
		brown						Corail	5
~~31~~30.		**QN**	**VG**	**(+)**	**(c)**				
		Clove: intensity of ground color of scale							
		very weak							1
		weak							2
		medium							3
		strong							4
		very strong							5
~~32~~31.	(*)	**PQ**	**VG**	**(+)**	**(c)**				
		Clove: over color of scale							
		absent						Messidrome	1
		yellowish white							2
		pink						Iberose	3
		purple							4
		brown							5

		English		français		deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
~~33~~32.		**QN**	**VG**		**(c)**				
		Clove: intensity of over color of scale							
		very weak							1
		weak							2
		medium							3
		strong							4
		very strong							5
~~34~~33.	(*)	**QN**	**VG**		**(c)**				
		Clove: anthocyanin stripes on scale							
		absent or weak						Precosem	1
		medium						Pinkysem	2
		strong							3
~~35~~34.	(*)	**QN**	**VG**		**(c)**				
		Clove: color of flesh							
		white						Printanor	1
		yellowish						Germidour	2
~~36~~35.	(*)	**QN**	**MG/VG**	**(+)**					
		Time of harvest maturity							
		very early							1
		very early to early						Primor	2
		early						Sprint	3
		early to medium						Dario	4
		medium						Germidour, Messidrome	5
		medium to late						Iberose	6
		late						Printanor	7
		late to very late						Flavor	8
		late very late						Ail du Nord, Gayant	9

		English		français		deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
~~37~~36.	(*)	**QN**	**MG/VG**	**(+)**					
		End of dormancy of clove in bulb							
		very early							1
		very early to early							2
		early						Sprint	3
		early to medium						Messidrome	4
		medium						Rose de Lautrec	5
		medium to late							6
		late						Flavor	7
		late to very late							8
		very late						Ail du Nord, Gayant	9

8. Explanations on the Table of Characteristics

8.1 Explanations covering several characteristics

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

(a) Observation should be made before the natural fall over of foliage (physiological senescence).

(b) Observations should be made before the harvest, when the flowering stem is fully developed or the foliage fully developed in case of absence of flowering stem.

(c) Observation should be made on dried material harvested from the trial.

8.2 Explanations for individual characteristics

General comment on 8.2: to replace pictures not taken at the time of observation of the characteristics with illustrations.

Ad. 1: Foliage: density

To be improved and finalized.
To check whether this characteristic can be replace by the individual characteristics mentioned in the explanation.

This characteristic results from a combination of several factors. It is primarily associated with the length of the internodes. Its visual assessment is also influenced by the width, the shape of the cross-section of the leaf blade and the attitude of the foliage.
Short internodes, combined with a large leaf blade, a flat cross-section and an more erect foliage, enhance the perception of foliage density.

Ad. 2: Foliage: attitude

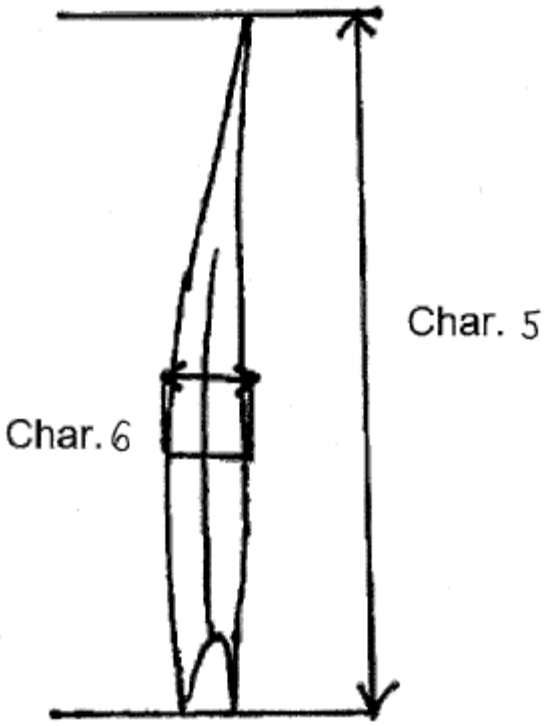
Observations should be made on the middle third of the plant. It corresponds to the angle formed by the base of the leaf and an imaginary vertical axis.

1	2	3
erect	erect to semi-erect	semi-erect

- to add angles between axis and leaves to illustrations for states 2 and 3, similarly to state 1

Ad. 5: Leaf blade: length

Observation should be made on the longest leaf blade.

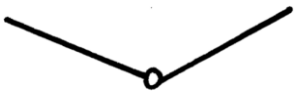


Ad. 6: Leaf blade: width

Cf. Ad. 5

Observation should be made at the widest part of the longest leaf blade.

Ad. 7: Leaf blade: shape in cross section

		
1	2	3
strongly concave	slightly concave	flat

Ad. 8: Pseudostem: anthocyanin coloration ~~at base~~

Observations should be made at ground level.

Ad. 9: Pseudostem: width ~~at base~~

Observations should be made at ground level.

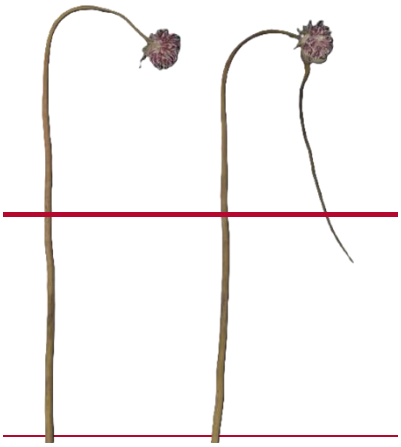
Ad. 10: Pseudostem: production of bulblets

This characteristic can be influence by the genetic background and the influence of agroclimatic conditions. The ability to produce bulblets through the pseudostem has to be observed at a late stage of observation (a).

~~Ad. 12: Only for varieties with Pseudostem: flowering stem present: curvature~~

~~1~~

~~absent~~

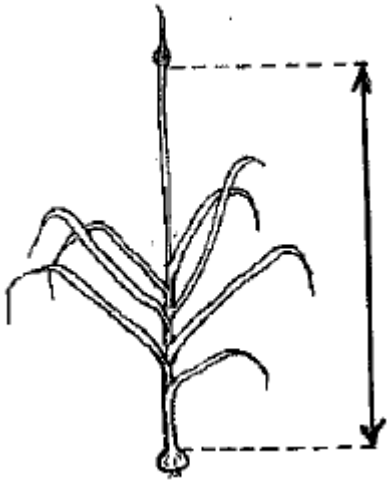


~~9~~

~~present~~

~~Observation has to be performed just before the harvest.~~

Ad. ~~13~~12: Only for varieties with Pseudostem: flowering stem present: length



~~Observation has to be performed just before the harvest.~~

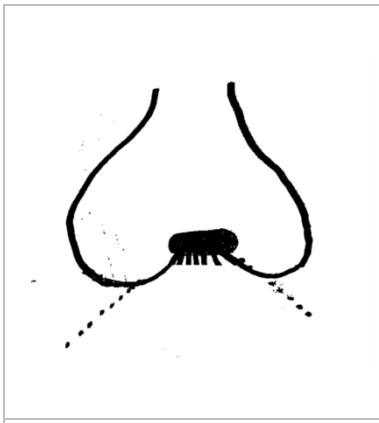
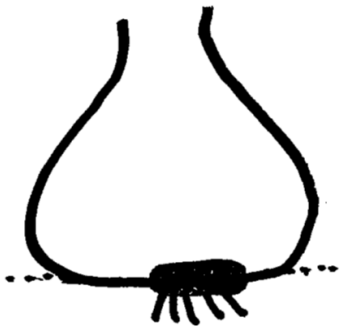
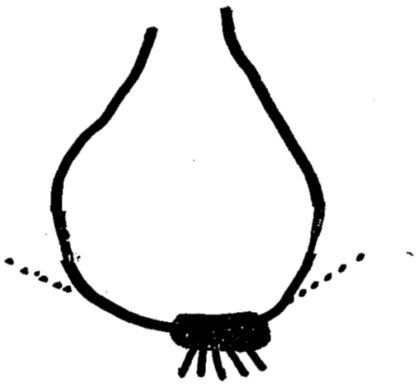
Ad. ~~15~~14: Bulb: shape in longitudinal section

1	2	3
transverse narrow elliptic	transverse broad elliptic	circular

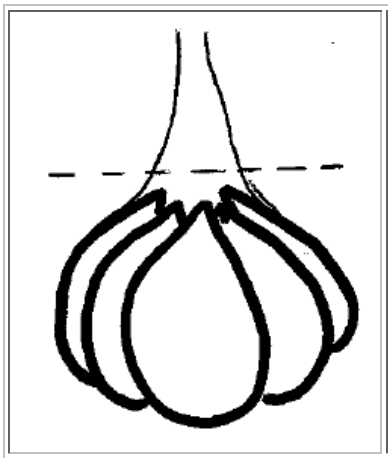
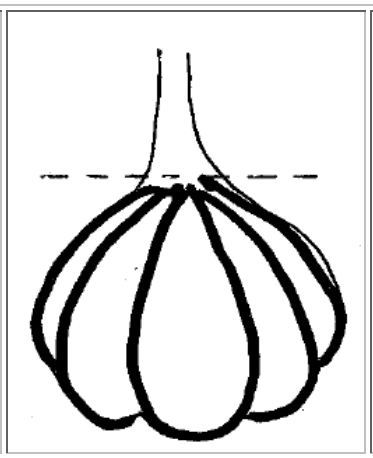
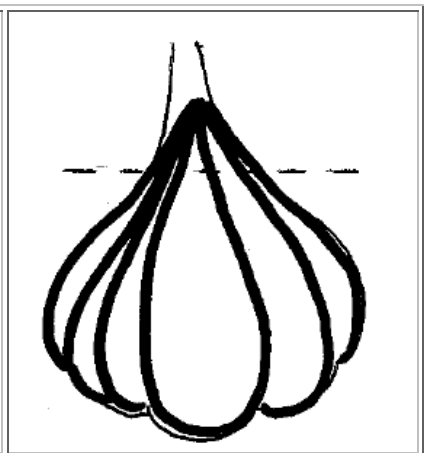
Ad. ~~16~~15: Bulb: shape in cross section

1	2
elliptic	circular

Ad. ~~17~~16: Bulb: position of root disc

		
1	2	3
recessed	at the same level	protruded

Ad. ~~18~~17: Bulb: position of cloves at top of bulb

		
1	2	3
inserted	at same level	exerted

Ad. ~~19~~18: Bulb: shape of base

1
depressed

2
flat

3
rounded

Ad. ~~20~~19: Bulb: compactness of cloves

It corresponds to the closeness of the cloves between them. Without space between cloves, the bulb is compact. The more space there is between cloves, the ~~looser~~ more loose the bulb is.

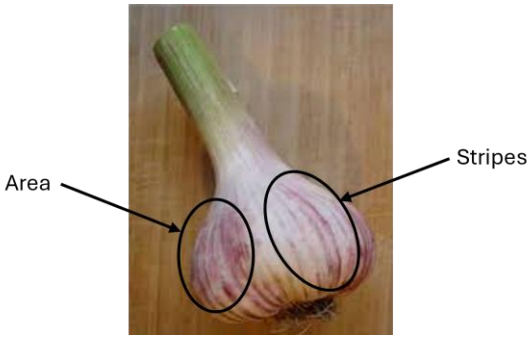
To improve explanation and add the observations can be done by touching the bulbs

Ad. ~~21~~20: Bulb: ground color of dry external scales

The ground color is the first color to appear chronologically during the development of the bulb. Other colors may develop in time in the form of stripes, area.

Ad. ~~22~~21: Bulb: anthocyanin area on dry external scales

Observations have to be done on the upper part of the bulb. This character is independent of the presence or absence of anthocyanin stripes.



Ad. ~~24~~23: Bulb: skin adherence of dry external scales

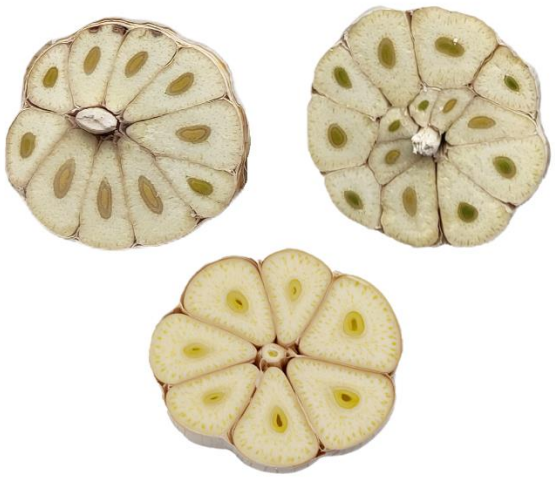
The dry external scales are more or less completely covering the cloves below. Regarding the level of adherence, the scales can loose a part of their integrity (cracks, rips...). The assessment of this characteristic combines a visual observation and also the touch to finalize the description.

1	2	3	4	5
very weak	weak	medium	strong	very strong

Ad. ~~26~~25: Bulb: number of cloves

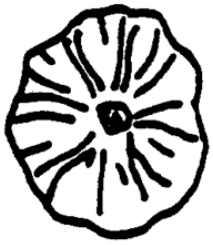
1	3	5	7	9
very few	few	medium	many	very many

Ad. ~~27~~26: Bulb: distribution of cloves

	
1	2
radial	non-radial

Please note that, even if it is often the case, the presence of a flower stem is not systematically linked to a radial distribution of cloves.

Ad. ~~28~~27: Bulb: external cloves

	
1	9
absent	present

Ad. ~~29~~28: Clove: size

The selected cloves to multiply a vegetative propagated variety have to correspond to the average size of the variety. The smaller and the bigger ones have to be discarded.

Ad. ~~30~~29: Clove: ground color of scale

TGP/14/6: SECTION 2: BOTANICAL TERMS
Subsection 3: Color: 3. Approaches to Describe Colors and Color Patterns

When an organ has two layers of tissue containing color pigmentation and one layer is covering the other, the colors of the two layers can be described as **ground color** and **over color**. The term **ground color** can be used in different ways:
(a) Ground color:
(i) The **ground color** is the first color to appear chronologically during the development of the plant part. Other colors may develop in time in the form of spots, blotches, or a flush.
(ii) The **ground color** is the color which has a continuous dispersion across the surface of the plant part. The **ground color** is not always the color occupying the largest surface area of the plant part concerned. For certain organs having two layers of tissue containing color pigmentation, and one layer is covering the other on the upper side of the organ it may be appropriate to determine the **ground color** by observing the main color of the lower side of the organ.

(b) Over color:
In the case of a plant part which has a **ground color** upon which a second color such as a flush develops over time, the flush is considered the **over color**. The **over color** is not always the color occupying the smallest surface area of the plant part concerned.

Eg. Same ground color and same over color, but in different proportions and intensity.

Ad. ~~31~~30: Clove: intensity of ground color of scale

The varieties with a white scale are not concerned by this characteristic.

Ad. ~~32~~31: Clove: over color of scale

Cf. Ad. 30: Clove: ground color of scale

Ad. ~~36~~35: Time of harvest maturity

The time of harvest maturity is estimated (around 50%) thanks to the level of natural senescence of foliage (yellowing and drying of the leaves) in a healthy culture.
This approach has to be calibrated thanks to the expected earliness of each cultigroup. It can potentially be ensured by the observations of the cross section of few harvested bulbs. At the right stage, the cloves are clean, firm an well-defined.

ready to harvest

Ad. ~~37~~36: End of dormancy of clove in bulb

Harvest of plants, with a minimum of soil. Beginning of the drying at open air, in the field (some hours).	Storage several weeks of the complete plants, in perforated boxes, placed in a ventilated room, to allow a complete drying at open air.	Cleaning of each plant: cutting of the roots and the pseudostem at around 5 cm of the base of the bulb.

The dried and prepared bulbs are stored in a ventilated room at an optimum temperature (20ºC to 25ºC), to avoid ambient excessive humidity, and a managed relative humidity, without being split into cloves.
The end of dormancy is assessed by observing the percentage of sprouted bulbs.

9. Literature

Brand, R., 1996, “L’Ail, une semence à part dans les Allium”, La Lettre des Ressources Génétiques Végétales, nº 9, octobre 1996, FR pp. 11 to 16.

Messiaen, C. M., Cohat, J., Leroux, J. P., Pichon, M., Beyries, A. 1993: “Vegetatively Propagated Edible Alliums”. Edition
INRA, FR, 222 pp.

Messiaen, C.M., “ La variabilité chez l’Ail”, La Lettre des Ressources Génétiques Végétales, nº 9, octobre 1996, FR, pp. 7 to 10.

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	*Allium sativum* L.
1.2 Common name	Garlic

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 [ ]

(b) partially known cross [ ]

(c) unknown cross [ ]

4.1.2 Mutation
(please state parent varieties)

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 [ ]
(c) Inbred line [ ]
(d) Other (Please provide details) [ ]

4.2.2 Vegetative propagation

(a) Division [ ]
(b) 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 (2)	**Foliage: attitude**		
	erect	Jolimont, Vayo	1 [ ]
	erect to semi-erect	Printanor	2 [ ]
	semi-erect	Germidour	3 [ ]
5.2 (3)	**Leaf blade: green color**		
	very light		1 [ ]
	~~very light to~~ light	Primor	2 [ ]
	~~light~~	~~Primor~~	~~3 [ ]~~
	~~light to medium~~		~~4 [ ]~~
	medium	Messidrome	~~5~~3 [ ]
	~~medium to dark~~		~~6 [ ]~~
	dark	Germidour	~~7~~4 [ ]
	~~dark to~~ very dark	~~Valdour~~	~~8~~5 [ ]
	~~very dark~~		~~9 [ ]~~
5.3 (4)	**Leaf blade: waxiness**		
	absent or very weak		1 [ ]
	weak	Sprint	2 [ ]
	medium	Messidrome	3 [ ]
	strong	Germidour	4 [ ]
	very strong	Gayant, Printanor	5 [ ]
5.4 (11)	**Pseudostem: flowering stem**		
	absent	Germidour	1 [ ]
	present	Rose de Lautrec	9 [ ]

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

	Characteristics	Example Varieties	Note
5.5 (~~13~~12)	**Only for varieties with Pseudostem: flowering stem present: length**		
	very short		1 [ ]
	short	Rose de Lautrec	2 [ ]
	medium	Precosem	3 [ ]
	long	Sultop	4 [ ]
	very long		5 [ ]
5.6 (~~14~~13)	**Bulb: size**		
	very small		1 [ ]
	very small to small		2 [ ]
	small	Vacoa	3 [ ]
	small to medium		4 [ ]
	medium	Printanor	5 [ ]
	medium to large		6 [ ]
	large	Messidrome	7 [ ]
	large to very large		8 [ ]
	very large		9 [ ]
5.7 (~~15~~14)	**Bulb: shape in longitudinal section**		
	transverse narrow elliptic	Sprint	1 [ ]
	transverse broad elliptic	Germidour	2 [ ]
	circular		3 [ ]
5.8 (~~21~~20)	**Bulb: ground color of dry external scales**		
	white	Aulxito, Printanor	1 [ ]
	yellowish white	Jolimont, Vigor Supreme	2 [ ]
5.9 (~~23~~22)	**Bulb: anthocyanin stripes on dry external scales**		
	absent or weak	Aulxito, Printanor	1 [ ]
	medium	Germidour	2 [ ]
	strong		3 [ ]
5.10 (~~28~~27)	**Bulb: external cloves**		
	absent	Sprint, Sultop	1 [ ]
	present	Messidor	9 [ ]

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

	Characteristics	Example Varieties	Note
5.11 (~~29~~28)	**Clove: size**		
	very small		1 [ ]
	veru small to small		2 [ ]
	small	Rose de Lautrec	3 [ ]
	small to medium		4 [ ]
	medium	Printanor	5 [ ]
	medium to large		6 [ ]
	large	Germidour	7 [ ]
	large to very large		8 [ ]
	very large		9 [ ]
5.12 (~~30~~29)	**Clove: ground color of scale**		
	white		1 [ ]
	yellowish white	Messidrome	2 [ ]
	pink	Printanor	3 [ ]
	purple		4 [ ]
	brown	Corail	5 [ ]
5.13 (~~32~~31)	**Clove: over color of scale**		
	absent	Messidrome	1 [ ]
	yellowish white		2 [ ]
	pink	Iberose	3 [ ]
	purple		4 [ ]
	brown		5 [ ]
5.14 (~~35~~34)	**Clove: color of flesh**		
	white	Printanor	1 [ ]
	yellowish	Germidour	2 [ ]

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

	Characteristics	Example Varieties	Note
5.15 (~~36~~35)	**Time of harvest maturity**		
	very early		1 [ ]
	very early to early	Primor	2 [ ]
	early	Sprint	3 [ ]
	early to medium	Dario	4 [ ]
	medium	Germidour, Messidrome	5 [ ]
	medium to late	Iberose	6 [ ]
	late	Printanor	7 [ ]
	late to very late	Flavor	8 [ ]
	late very late	Ail du Nord, Gayant	9 [ ]
5.16 (~~37~~36)	**End of dormancy of clove in bulb**		
	very early		1 [ ]
	very early to early		2 [ ]
	early	Sprint	3 [ ]
	early to medium	Messidrome	4 [ ]
	medium	Rose de Lautrec	5 [ ]
	medium to late		6 [ ]
	late	Flavor	7 [ ]
	late to very late		8 [ ]
	very late	Ail du Nord, Gayant	9 [ ]

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

6. Similar varieties and differences from these varieties

Please use the following table and box for comments to provide information on how your candidate variety differs from the variety (or varieties) which, to the best of your knowledge, is (or are) most similar. This information may help the examination authority to conduct its examination of distinctness in a more efficient way

Denomination(s) of variety(ies) similar to your candidate variety	Characteristic(s) in which your candidate variety differs from the similar variety(ies)	Describe the expression of the characteristic(s) for the **similar** variety(ies)	Describe the expression of the characteristic(s) for **your** candidate variety
Example			

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

A representative color photograph of the variety displaying its main distinguishing feature(s), should accompany the Technical Questionnaire. The photograph will provide a visual illustration of the candidate variety which supplements the information provided in the Technical Questionnaire.

The key points to consider when taking a photograph of the candidate variety are:

• Indication of the date and geographic location
• Correct labeling (breeder's reference)
• Good quality printed photograph (minimum 10 cm x 15 cm) and/or sufficient resolution electronic format version (minimum 960 x 1280 pixels)

Further guidance on providing photographs with the Technical Questionnaire is available in document TGP/7 "Development of Test Guidelines", Guidance Note 35 (http://www.upov.int/tgp/en/).

The link provided may be deleted by members of the Union when developing authorities' own test guidelines.

7.* Representative color phtotograph requested

7.* Resistance to pests and diseases
Please specify:

7.* Special conditions for the examination of the variety

7.* Type
Long-day type Autumn [ ]
Short-day type Spring [ ]

7.* Other information

[#] Authorities may allow certain of this information to be provided in a confidential section of the Technical Questionnaire.

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

8. Authorization for release

(a) Does the variety require prior authorization for release under legislation concerning the protection of the environment, human and animal health?

Yes [ ] No [ ]

(b) Has such authorization been obtained?

Yes [ ] No [ ]

If the answer to (b) is yes, please attach a copy of the authorization.

9. Information on plant material to be examined or submitted for examination

9.1 The expression of a characteristic or several characteristics of a variety may be affected by factors, such as pests and disease, chemical treatment (e.g. growth retardants or pesticides), effects of tissue culture, different rootstocks, scions taken from different growth phases of a tree, etc.

9.2 The plant material should not have undergone any treatment which would affect the expression of the characteristics of the variety, unless the competent authorities allow or request such treatment. If the plant material has undergone such treatment, full details of the treatment must be given. In this respect, please indicate below, to the best of your knowledge, if the plant material to be examined has been subjected to:

(a)	Microorganisms (e.g. virus, bacteria, phytoplasma)	Yes [ ]	No [ ]
(b)	Chemical treatment (e.g. growth retardant, pesticide)	Yes [ ]	No [ ]
(c)	Tissue culture	Yes [ ]	No [ ]
(d)	Other factors	Yes [ ]	No [ ]

Please provide details for where you have indicated "yes".

_____

9.3 Has the plant material to be examined been tested for the presence of virus or other pathogens?

Yes [ ]

(please provide details as specified by the Authority)

No [ ]

9.4

The provided material (application and/or example variety) must be in good sanitary condition and free from virus, in particular from Onion yellow dwarf virus (OYDV) *and* Leek yellow stripe virus (LYSV).

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]