



TG/162/5(proj.1)

ORIGINAL: English

DATE: 2024-03-09

INTERNATIONAL UNION FOR THE PROTECTION OF NEW VARIETIES OF PLANTS

Geneva

DRAFT

GARLIC

UPOV Code(s): ALLIU_SAT

Allium sativum 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 Vegetables
at its fifty-eighth session, to be held virtually
from 2024-04-22 to 2024-05-25*

Disclaimer: this document does not represent UPOV policies or guidance

Alternative names:*

<i>Botanical name</i>	<i>English</i>	<i>French</i>	<i>German</i>	<i>Spanish</i>
<i>Allium sativum</i> 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.....	5
3.5 Additional Tests.....	5
4. ASSESSMENT OF DISTINCTNESS, UNIFORMITY AND STABILITY.....	5
4.1 Distinctness.....	5
4.2 Uniformity.....	6
4.3 Stability.....	7
5. GROUPING OF VARIETIES AND ORGANIZATION OF THE GROWING TRIAL.....	8
6. INTRODUCTION TO THE TABLE OF CHARACTERISTICS.....	8
6.1 Categories of Characteristics.....	8
6.2 States of Expression and Corresponding Notes.....	8
6.3 Types of Expression.....	8
6.4 Example Varieties.....	8
6.5 Legend.....	10
7. TABLE OF CHARACTERISTICS/TABLEAU DES CARACTÈRES/MERKMALSTABELLE/TABLA DE CARACTERES.....	11
8. EXPLANATIONS ON THE TABLE OF CHARACTERISTICS.....	25
8.1 Explanations covering several characteristics.....	25
8.2 Explanations for individual characteristics.....	26
9. LITERATURE.....	32
10 TECHNICAL QUESTIONNAIRE.....	33

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 in the case of 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
Vegetatively propagated varieties: 120 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. It must be in good sanitary condition and free from virus, in particular from Onion *yellow dwarf virus* (OYDV) and Leek *yellow stripe virus* (LYSV).

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 vegetatively 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 Separate plots for visual observation and for measuring can only be used if they have been subject to similar environmental conditions.

Because of the effect of conditions of storage of bulbs on the expression of characteristics, comparison of varieties should be made only on material which has been propagated and stored under the same temperature and humidity 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 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 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 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 uniformity of hybrids or inbred lines, a population standard of 1% and an acceptance probability of at least 95% should be applied. In the case of a sample size of 200 plants, 5 off-types are allowed.

4.2.5 For the assessment of uniformity 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 100 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 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) Pseudostem: flowering stem (characteristic 10)
 - (b) Clove: color of scale (characteristic 29)
 - (c) Time of harvest maturity (characteristic 33)
 - (d) End of dormancy of clove in bulb (characteristic 34)
- 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 (*) Asterisked 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)-(b) See Explanations on the Table of Characteristics in Chapter 8.1

7 Not applicable

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

	English		français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
1. (*)	QN	VG	(a)				
	Foliage: density						
		very loose				Ti Rouge	1
		very loose to loose					2
		loose				Vacoa	3
		loose 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					3
3. (*)	QN	VG	(a)				
	Leaf: green color						
		very light					1
		very light to light					2
		light				Primor	3
		light to medium					4
		medium				Messidrome	5
		medium to dark					6
		dark				Germidour	7
		dark to very dark				Valdour	8
		very dark					9
4.	QN	VG	(a)				
	Leaf: 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: length (longest leaf)					
	very short					1
	very short to short					2
	short					3
	short to medium					4
	medium					5
	medium to long					6
	long				Sultop	7
	long to very long					8
	very long					9
6. (*)	QN	MS/VG	(a)			
	Leaf: width (as for 5)					
	very narrow					1
	very narrow to narrow					2
	narrow					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: shape in cross section					
	strongly concave				Vacoa	1
	slightly concave					2
	flat				Germidour	3

	English		français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
8. (*)	QN	VG	(a)				
	Pseudostem: intensity of anthocyanin coloration at base						
	absent or very weak					Printanor	1
	very weak to weak						2
	weak					Messidrome	3
	weak to medium						4
	medium						5
	medium to strong						6
	strong					Germidour	7
	strong to very strong						8
	very strong						9
9. (*)	QN	MS/VG	(a)				
	Pseudostem: width of the base						
	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: flowering stem						
	absent					Germidour	1
	present					Rose de Lautrec	9
11 (*)	QL	VG	(+)	(a)			
	Flowering stem: curvature						
	absent					Sultop	1
	present					Iberose	9

	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
12 (*)	QN	MS/VG	(+)	(a)		
	Flowering stem: length					
	very short					1
	very short to short					2
	short				Rose de Lautrec	3
	short to medium					4
	medium					5
	medium to long					6
	long				Sultop	7
	long to very long					8
	very long					9
13 (*)	QL	VG	(+)	(a)		
	Flowering stem: emergence of bulblets through the pseudostem					
	absent				Rose de Lautrec	1
	present				Germidour	9
14 (*)	QN	MS/VG		(b)		
	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 (*)	QN	VG	(+)	(b)		
	Bulb: shape in longitudinal section					
	transverse narrow elliptic				Sprint	1
	transverse broad elliptic				Germidour	2
	circular					3

	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
16	QN	VG	(b)			
	Bulb: shape in cross section					
	elliptic					1
	circular				Sprint	2
17	QN	VG	(+)	(b)		
	Bulb: position of cloves at top of bulb					
	inserted				Sprint	1
	at same level				Corail	2
	exerted				Germidour	3
18 (*)	QN	VG	(+)	(b)		
	Bulb: position of root disc					
	depressed				Germidour	1
	flat				Rose de Lautrec	2
	raised					3
19 (*)	PQ	VG	(+)	(b)		
	Bulb: shape of base					
	recessed				Germidour	1
	flat				Printanor	2
	rounded					3
20	QN	VG	(b)			
	Bulb: compactness of cloves					
	very loose					1
	loose				Sprint	2
	medium				Germidour	3
	compact				Printanor	4
	very compact					5
21 (*)	PQ	VG	(b)			
	Bulb: ground color of dry external scales					
	white				Printanor	1
	yellowish white				Vigor Max, Vigor Supreme	2
	reddish white				Germidour	3

	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
22 (*)	QL	VG	(b)			
	Bulb: anthocyanin stripes on dry external scales					
	absent				Aulxito, Printanor	1
	present				Germidour, Sprint	9
23	QN	VG	(b)			
	Bulb: skin adherence of dry external scales					
	very weak					1
	weak				Sprint	2
	medium				Messidrome	3
	strong				Gayant, Printanor	4
	very strong					5
24	QN	MS/VG	(b)			
	Bulb: thickness of dry external scales					
	very thin					1
	very thin to thin					2
	thin					3
	thin to medium					4
	medium					5
	medium to thick					6
	thick				Jolimont	7
	thick to very thick					8
	very thick					9
25 (*)	QN	MS/VG	(b)			
	Bulb: number of cloves					
	very few					1
	very few to few					2
	few					3
	few to medium					4
	medium				Printanor	5
	medium to many					6
	many					7
	many to very many					8
	very many					9

	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
26 (*)	QL	VG	(+)	(b)		
	Bulb: distribution of cloves					
	radial				Rose de Lautrec, Sprint	1
	non-radial				Jolimont, Messidrome	2
27 (*)	QL	VG	(+)	(b)		
	Bulb: external cloves					
	absent				Sprint, Sultop	1
	present					9
28 (*)	QN	MS/VG	(+)	(b)		
	Clove: size					
	very small					1
	very 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
29 (*)	PQ	VG		(b)		
	Clove: color of scale					
	white					1
	cream				Messidrome	2
	pink				Printanor	3
	purple				Sprint	4
	brown				Corail	5

	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
30	(*) QN VG	(b)				
	Clove: intensity of color of scale (excluding white scale)					
	medium to strong					
	strong to very strong					
	very weak to weak					
	weak to medium					
	very weak					1
	weak				Printanor	2
	medium				Iberose, Sultop	3
	strong					4
	very strong					5
31	(*) QL VG	(b)				
	Clove: anthocyanin stripes on scale					
	absent					1
	present					9
32	(*) QN VG	(b)				
	Clove: color of flesh					
	white				Printanor	1
	yellowish				Germidour	2
33	(*) QN MS/VG	(b)				
	Time of harvest maturity					
	very early					1
	very early to early				Primor	2
	early				Sprint	3
	early to medium					4
	medium				Germidour, Messidrome	5
	medium to late					6
	late				Printanor	7
	late to very late					8
	late very late				Ail du Nord, Gayant	9

	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
34	(*) QN	MS/VG	(+)			
	End of dormancy of clove in bulb					
	very early					1
	very early to early					2
	early				Sprint	3
	early to medium					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) Observations on the leaf, foliage, pseudostem, and flowering stem should be made before the foliage fall over.
- (b) Observations on the bulbs and cloves should be made on dried material harvested from the trial.

8.2 *Explanations for individual characteristics*

Ad. 2: Foliage: attitude

Observations should be made on the middle third of the plant.



1
erect



2
erect to semi-erect



3
semi-erect

Ad. 11: Flowering stem: curvature

to include

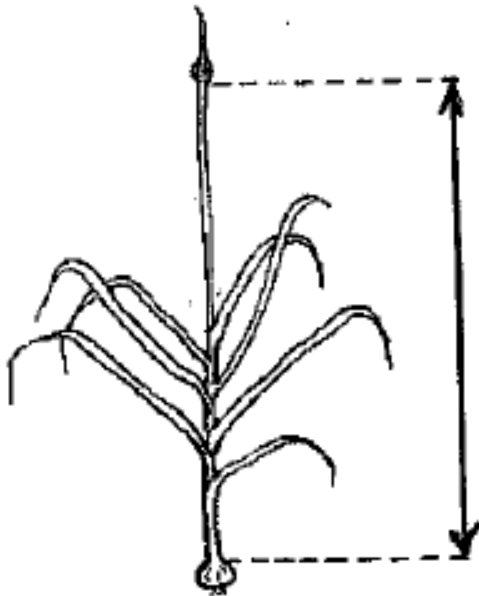


1
absent

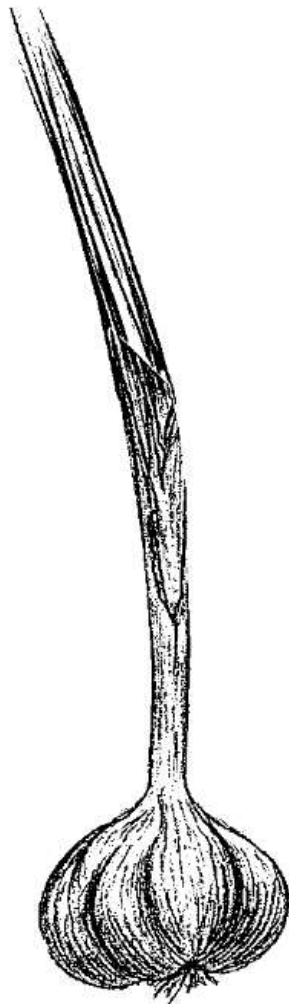


9
present

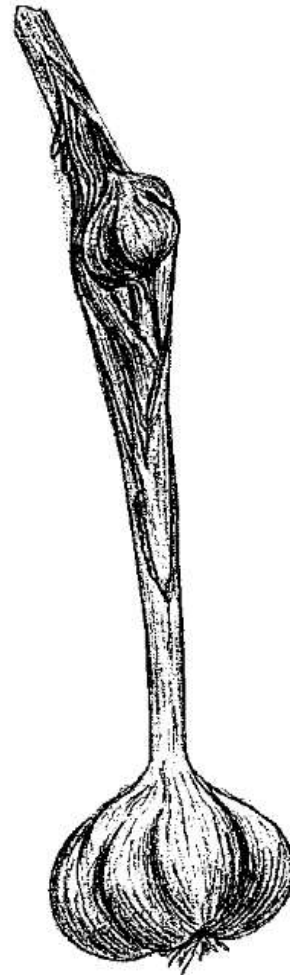
Ad. 12: Flowering stem: length



Ad. 13: Flowering stem: emergence of bulblets through the pseudostem

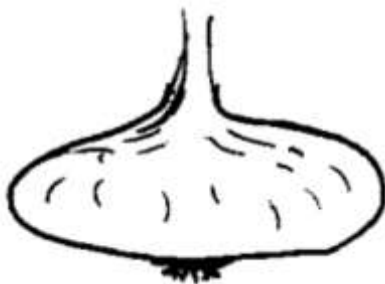


1
absent

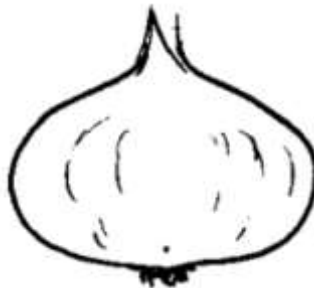


9
present

Ad. 15: Bulb: shape in longitudinal section



1
transverse narrow elliptic

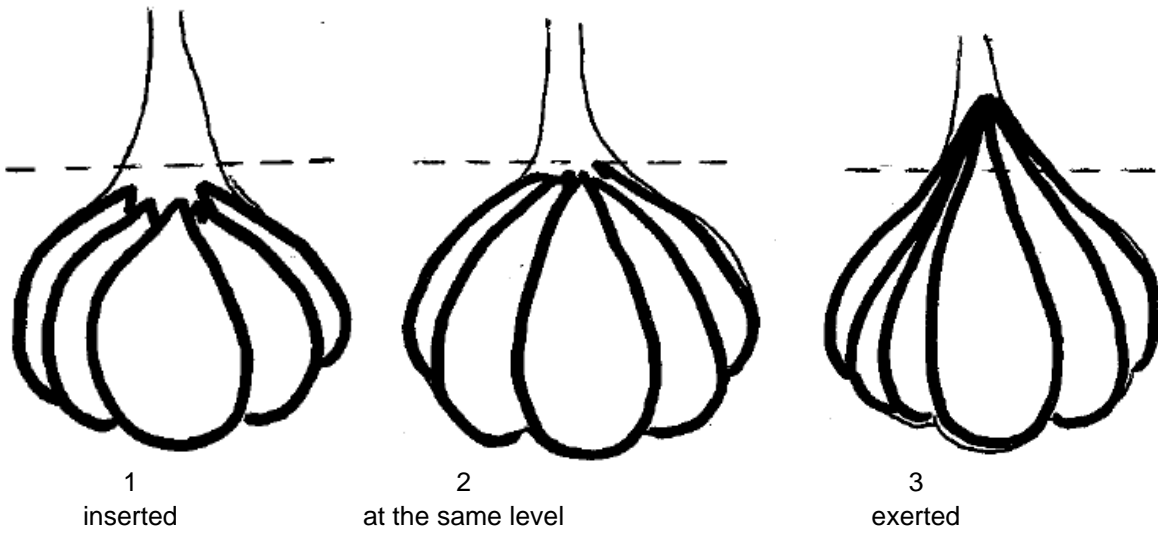


2
transverse broad elliptic

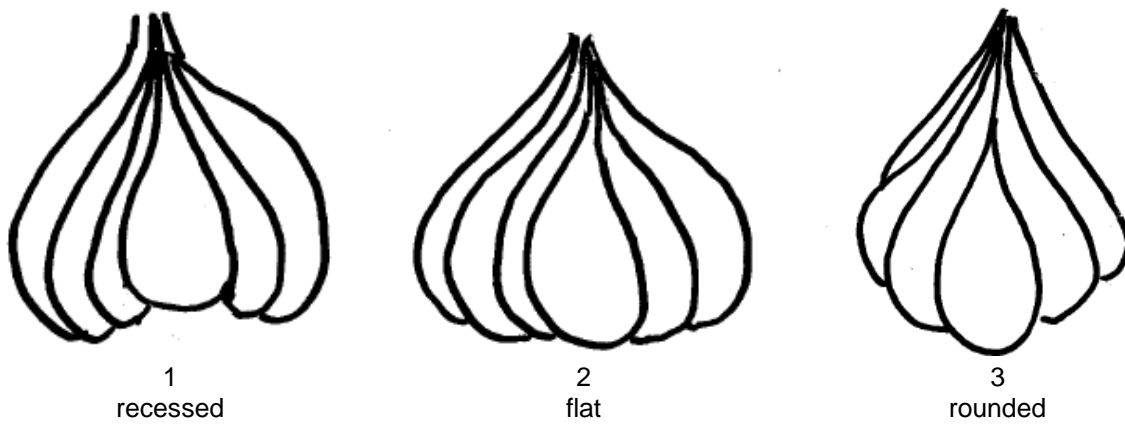


3
circular

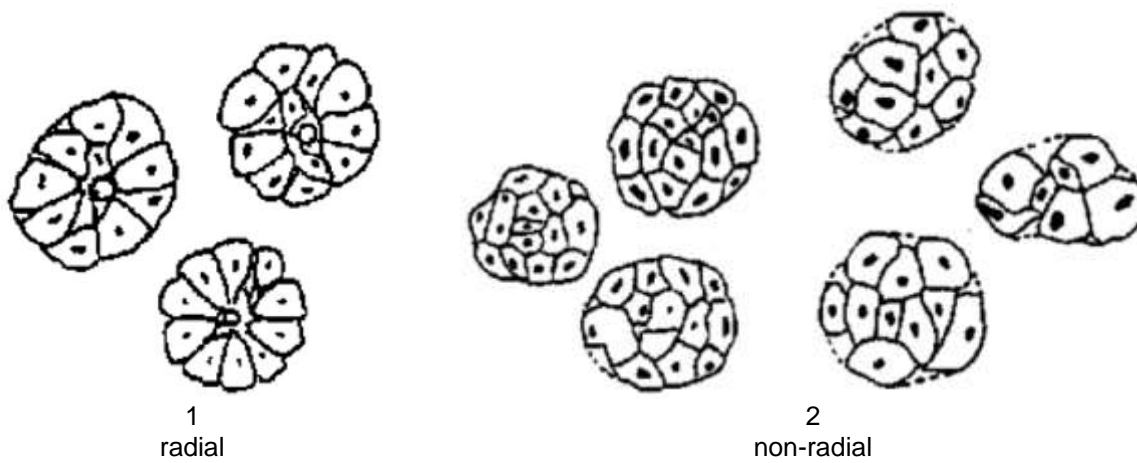
Ad. 17: Bulb: position of cloves at top of bulb



Ad. 19: Bulb: shape of base



Ad. 26: Bulb: distribution of cloves



Ad. 27: Bulb: external cloves



1
absent



9
present



Ad. 28: Clove: size

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

Ad. 34: End of dormancy of clove in bulb

After harvest, bulbs are stored in a ventilated room at an optimum temperature (20°C to 25°C), to avoid an excessive humidity, and a managed relative humidity, without being split into cloves. The end of dormancy is evaluated 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, n° 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, n° 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	<input type="text" value="Allium sativum L."/>
1.2 Common name	<input type="text" value="Garlic"/>

2. Applicant	
Name	<input type="text"/>
Address	<input type="text"/>
Telephone No.	<input type="text"/>
Fax No.	<input type="text"/>
E-mail address	<input type="text"/>
Breeder (if different from applicant)	<input type="text"/>

3. Proposed denomination and breeder's reference	
Proposed denomination (if available)	<input type="text"/>
Breeder's reference	<input type="text"/>

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

#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 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.

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 Foliage: attitude (2)		
erect	Jolimont, Vayo	1 []
erect to semi-erect	Printanor	2 []
semi-erect		3 []
5.2 Leaf: green color (3)		
very light		1 []
very light to light		2 []
light	Primor	3 []
light to medium		4 []
medium	Messidrome	5 []
medium to dark		6 []
dark	Germidour	7 []
dark to very dark	Valdour	8 []
very dark		9 []
5.3 Pseudostem: flowering stem (10)		
absent	Germidour	1 []
present	Rose de Lautrec	9 []
5.4 Bulb: size (14)		
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 []

Characteristics	Example Varieties	Note
5.5 Bulb: shape in longitudinal section (15)		
transverse narrow elliptic	Sprint	1 []
transverse broad elliptic	Germidour	2 []
circular		3 []
5.6 Bulb: ground color of dry external scales (21)		
white	Printanor	1 []
yellowish white	Vigor Max, Vigor Supreme	2 []
reddish white	Germidour	3 []
5.7 Bulb: external cloves (27)		
absent	Sprint, Sultop	1 []
present		9 []
5.8 Clove: size (28)		
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 []
5.9 Clove: color of scale (29)		
white		1 []
cream	Messidrome	2 []
pink	Printanor	3 []
purple	Sprint	4 []
brown	Corail	5 []
5.10 Clove: color of flesh (32)		
white	Printanor	1 []
yellowish	Germidour	2 []

Characteristics	Example Varieties	Note
5.11 Time of harvest maturity (33)		
very early		1 []
very early to early	Primor	2 []
early	Sprint	3 []
early to medium		4 []
medium	Germidour, Messidrome	5 []
medium to late		6 []
late	Printanor	7 []
late to very late		8 []
late very late	Ail du Nord, Gayant	9 []
5.12 End of dormancy of clove in bulb (34)		
very early		1 []
very early to early		2 []
early	Sprint	3 []
early to medium		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
<i>Example</i>			
<p>Comments:</p>			

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 labelling (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 photograph 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 <input type="checkbox"/>	No <input type="checkbox"/>
(b) Chemical treatment (e.g. growth retardant, pesticide)	Yes <input type="checkbox"/>	No <input type="checkbox"/>
(c) Tissue culture	Yes <input type="checkbox"/>	No <input type="checkbox"/>
(d) Other factors	Yes <input type="checkbox"/>	No <input type="checkbox"/>

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

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

Applicant's name

Signature Date