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INTERNATIONAL UNION
FOR THE PROTECTION
OF NEW VARIETIES OF
PLANTS

UNION INTERNATIONALE
POUR LA PROTECTION
DES OBTENTIONS
VÉGÉTALES

INTERNATIONALER
VERBAND ZUM SCHUTZ
VON PFLANZEN-
ZÜCHTUNGEN

UNIÓN INTERNACIONAL
PARA LA PROTECCIÓN
DE LAS OBTENCIONES
VEGETALES

DRAFT

**GUIDELINES
FOR THE CONDUCT OF TESTS
FOR DISTINCTNESS, UNIFORMITY AND STABILITY**

GARLIC
(Allium sativum L.)

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

<u>TABLE OF CONTENTS</u>	<u>PAGE</u>
I. Subject of these Guidelines	3
II. Material Required	3
III. Conduct of Tests	3
IV. Methods and Observations.....	4
V. Grouping of Varieties	4
VI. Characteristics and Symbols	4
VII. Table of Characteristics	5
VIII. Explanations on the Table of Characteristics	12
IX. Literature	15
X. Technical Questionnaire	16

I. Subject of these Guidelines

These Test Guidelines apply to all vegetatively propagating varieties of *Allium sativum* L.

II. Material Required

1. The competent authorities decide when, where and in what quantity and quality the seed required for testing the variety is to be delivered. Applicants submitting material from a State other than that in which the testing takes place must make sure that all customs formalities are complied with. The minimum quantity of plant material to be supplied by the applicant in one or several samples should be:

60 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 conditions and free from virus, in particular from leek yellow stripe virus and onion yellow dwarf virus.

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

III. Conduct of Tests

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

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

3. The tests should be carried out under conditions ensuring normal growth. The size of the plots should be such that plants or parts of plants may be removed for measurement and counting without prejudice to the observations which must be made up to the end of the growing period. As a minimum, each test should include a total of 120 plants which should be divided between two or more replicates. Separate plots for observation and for measuring can only be used if they have been subject to similar environmental conditions.

4. Because of the effect of the history and 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 (e.g. 15°C to 18°C).

5. Additional tests for special purposes may be established.

IV. Methods and Observations

1. Unless otherwise indicated, all observations determined by measurement or counting should be made on 30 plants or parts taken from each of 30 plants.
2. For the assessment of uniformity a population standard of 1% with an acceptance probability of at least 95% should be applied. In the case of a sample size of 120 plants the maximum number of off-types allowed would be 3.
3. All observations on the leaf, foliage and flowering stem should be made before foliage fall-over.
4. All observations on the bulb should be made on harvested bulbs.

V. Grouping of Varieties

1. The collection of varieties to be grown should be divided into groups to facilitate the assessment of distinctness. Characteristics which are suitable for grouping purposes are those which are known from experience not to vary, or to vary only slightly, within a variety. Their various states of expression should be fairly evenly distributed throughout the collection.
2. It is recommended that the competent authorities use the following characteristics for grouping varieties:
 - (a) Pseudostem: flowering stem (characteristic 10)
 - (b) Clove: color of scale (characteristic 29)
 - (c) Time of harvest maturity (fall-over of 80% of plants) (characteristic 33)
 - (d) End of dormancy of clove in bulb (characteristic 34)

VI. Characteristics and Symbols

1. To assess distinctness, uniformity and stability, the characteristics and their states as given in the Table of Characteristics should be used.
2. Notes (numbers), for the purposes of electronic data processing, are given opposite the states of expression for each characteristic.
3. Legend:
 - (*) Characteristics that should be used on all varieties in every growing period over which the examinations are made and always be included in the variety descriptions, except when the state of expression of a preceding characteristic or regional environmental conditions render this impossible.
 - (+) See Explanations on the Table of Characteristics in Chapter VIII.

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

English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
1. Plant: density of leaves (* (*)	Plante: densité des feuilles	Pflanze: Dichte der Blätter	Planta: densidad de las hojas		
loose	lâche	locker	laxa	Ramses	3
medium	moyenne	mittel	media	Printanor	5
dense	dense	dicht	densa	Germidour	7
2. Foliage: attitude (* (+)	Feuillage: port	Laub: Haltung	Follaje: porte		
erect	dressé	aufrecht	erecto	Jolimont	1
erect to semi-erect	dressé à demi-dressé	aufrecht bis halbaufrecht	erecto a semierecto	Printanor	2
semi-erect	demi-dressé	halbaufrecht	semierecto	Jardinor	3
3. Leaf: green color (* (*)	Feuille: couleur verte	Blatt: Grünfärbung	Hoja: color verde		
light	claire	hell	claro		3
medium	moyenne	mittel	medio	Messidrome	5
dark	foncée	dunkel	oscuro	Germidour	7
4. Leaf: waxiness	Feuille: pruine	Blatt: Bereifung	Hoja: cerosidad		
absent or very weak	nulle ou très faible	fehlend oder sehr gering	ausente o muy débil		1
weak	faible	gering	débil	Sprint	3
medium	moyenne	mittel	media	Messidrome	5
strong	forte	stark	fuerte	Moratop, Germidour	7
very strong	très forte	sehr stark	muy fuerte	Gayant, Printanor	9

English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
5. Leaf: length (longest leaf) (*)	Feuille: longueur (feuille la plus longue)	Blatt: Länge (längstes Blatt)	Hoja: longitud (hoja más larga)		
short	courte	kurz	corta	Jardinor	3
medium	moyenne	mittel	media	Morasur, Moraluz	5
long	longue	lang	larga	Sultop	7
6. Leaf: width (as for 5) (*)	Feuille: largeur (comme pour 5)	Blatt: Breite (wie unter 5)	Hoja: anchura (como para 5)		
narrow	étroite	schmal	estrecha	Ramses	3
medium	moyenne	mittel	mediana	Printanor	5
broad	large	breit	ancha	Germidour	7
7. Leaf: shape in cross section (*)	Feuille: forme en section transversale	Blatt: Form im Querschnitt	Hoja: forma de la sección transversal		
flat	plane	flach	plana	Germidour	1
slightly concave	légèrement concave	leicht konkav	ligeramente cóncava	Ramses	2
strongly concave	fortement concave	stark konkav	fuertemente cóncava		3
8. Pseudostem: intensity of anthocyanin coloration at base (*)	Pseudotige: intensité de la pigmentation anthocyanique à la base	Pseudostamm: Stärke der Anthocyanfärbung an der Basis	Pseudotallo: intensidad de la pigmentación anto-ciánica en la base		
absent or very weak	absente ou très faible	fehlend oder sehr gering	ausente o muy débil	Printanor	1
weak	faible	gering	débil	Messidrome	3
medium	moyenne	mittel	media		5
strong	forte	stark	fuerte	Germidour	7
very strong	très forte	sehr stark	muy fuerte		9
9. Pseudostem: width of the base (*)	Pseudotige: largeur de la base	Pseudostamm: Breite der Basis	Pseudotallo: anchura de la base		
narrow	étroite	schmal	estrecho	Ramses	3
medium	moyenne	mittel	medio	Printanor	5
broad	large	breit	ancho	Germidour	7

English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
10. Pseudostem: (*) flowering stem	Pseudotige: tige florifère	Scheinstamm: blühender Trieb	Pseudotallo: tallo floral		
absent	absente	fehlend	ausente	Germidour	1
present	présente	vorhanden	presente	Rose de Lautrec	9
11. Flowering stem: (*) curvature (+)	Hampe florale: courbure	Blütender Trieb: Krümmung	Tallo floral: curvatura		
absent	absente	fehlend	ausente	Sultop, Morasur	1
present	présente	vorhanden	presente	Iberose	9
12. Flowering stem: (*) length	Hampe florale: longueur	Blütender Trieb: Länge	Tallo floral: longitud		
short	courte	kurz	corto	Rose de Lautrec	3
medium	moyenne	mittel	mediano	Morasol	5
long	longue	lang	largo	Sultop	7
13. Flowering stem: (*) bulblets (+)	Hampe florale: bulbilles	Blütender Trieb: Bulbillen	Tallo floral: bulbillos		
absent	absentes	fehlend	ausentes	Rose de Lautrec	1
present	présentes	vorhanden	presentes	Germidour	9
14. Bulb: size (*)	Bulbe: taille	Zwiebel: Größe	Bulbo: tamaño		
small	petit	klein	pequeño	Fructidor	3
medium	moyen	mittel	mediano	Printanor	5
large	grand	groß	grande	Messidrome	7
15. Bulb: shape in longi- (*) tudinal section (+)	Bulbe: forme en section longitudinale	Zwiebel: Form im Längsschnitt	Bulbo: forma en sección longitudinal		
transverse elliptic	elliptique transverse	quer elliptisch	elíptica transversal	Sprint	1
oblate	aplati	breitrund	achatado	Germidour	2
circular	arrondi	rund	circular	De Roumanie	3

English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
16. Bulb: shape in cross section	Bulbe: forme en section transversale	Zwiebel: Form im Querschnitt	Bulbo: forma en sección transversal		
elliptic	elliptique	elliptisch	elíptica	Fructidor	1
circular	arrondi	rund	circular	Sprint	2
17. Bulb: position of cloves at tip of bulb (+)	Bulbe: position des caïeux à l'extrémité supérieure du bulbe	Zwiebel: Position der Zehen an der Spitze der Zwiebel	Bulbo: posición de los dientes en el extremo del bulbo		
inserted	insérée	im Hals	insertos	Sprint	1
at same level	au même niveau	am Halsbeginn	al mismo nivel	Corail	2
exerted	extérieure	unterhalb des Halses	exertos	Germidour	3
18. Bulb: position of root disc (*)	Bulbe: position du plateau racinqire	Zwiebel: Position der Wurzelscheibe	Bulbo: posición del disco radicular		
depressed	déprimée	eingesenkt	deprimido	Germidour	1
flat	plane	flach	plano	Rose de Lautrec	2
raised	en saillie	vorgewölbt	protuberante		3
19. Bulb: shape of base (*) (+)	Bulbe: forme de la base	Zwiebel: Form der Basis	Bulbo: forma de la base		
recessed	déprimée	eingesenkt	deprimida	Ramses, Germidour	1
flat	plate	flach	plana	Printanor	2
rounded	arrondie	abgerundet	redonda	de Roumanie	3
20. Bulb: compactness of cloves (*)	Bulbe: compacité des caïeux	Zwiebel: Dichte der Zehen	Bulbo: compacidad de los dientes		
loose	faible	locker	laxo	Sprint	3
medium	moyenne	mittel	medio	Germidour	5
compact	forte	dicht	compacto	Printanor	7

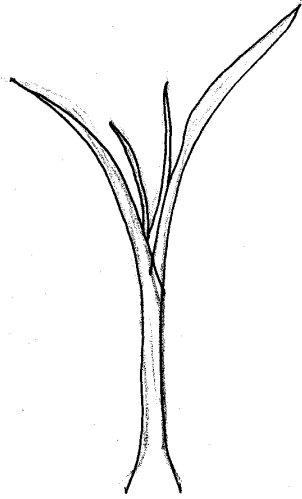
English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
21. Bulb: ground color of dry external scales (*)	Bulbe: couleur de fond des tuniques externes sèches	Zwiebel: Grundfarbe der trockenen Außenschalen	Bulbo: color de fondo de la piel seca externa		
white	blanche	weiß	blanco	Ramses, Printanor	1
yellowish	jaunâtre	gelblich	amarillento	Vigor Max, Vigor Supreme	2
reddish	rougeâtre	rötlich	rojizo	Germidour	3
22. Bulb: anthocyanin stripes on dry external scales (*)	Bulbe: striures anthocyaniques sur les tuniques externes sèches	Zwiebel: Anthocyanstreifen auf den trockenen Außenschalen	Bulbo: estrías antocíánicas en la piel seca externa		
absent	absentes	fehlend	ausentes	Ramses, Printanor	1
present	présentes	vorhanden	presentes	Sprint, Germidour	9
23. Bulb: skin adherence of dry external scales	Bulbe: adhérence des tuniques externes sèches	Zwiebel: Haftung der trockenen Außenschalen	Bulbo: adherencia de la piel seca externa		
weak	faible	gering	débil	Sprint	3
medium	moyenne	mittel	media	Messidrome	5
strong	forte	stark	fuerte	Printanor, Gayant	7
24. Bulb: thickness of dry external scales	Bulbe: épaisseur des tuniques externes sèches	Zwiebel: Dicke der trockenen Außenschalen	Bulbo: espesor de la piel seca externa		
thin	minces	dünn	delgada	Ramses	3
medium	moyennes	mittel	media	Morasur	3
thick	épaisses	dick	gruesa	Jolimont	7
25. Bulb: number of cloves (*)	Bulbe: nombre de caïeux	Zwiebel: Anzahl Zehen	Bulbo: número de dientes		
few	petit	gering	bajo	Mondor	3
medium	moyen	mittel	medio	Printanor	5
many	grand	groß	alto	Ramses	7

English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
26. Bulb: distribution of cloves (* (+)	Bulbe: distribution des caïeux	Zwiebel: Verteilung der Zehen	Bulbo: distribución de los dientes		
radial	rayonnante	radial	radial	Rose de Lautrec, Sprint	1
regular	symétrique	regelmäßig	regular	Messidrome	2
irregular	irrégulière	unregelmäßig	irregular	Blanc de Beaumont, Rougeatre de Vendée	3
27. Bulb: external cloves (* (+)	Bulbe: caïeux externes	Zwiebel: externe Zehen	Bulbo: dientes exteriores		
absent	absents	fehlend	ausentes	Sprint, Sultop	1
present	présents	vorhanden	presentes	Blanc de Beaumont, Morasol	9
28. Clove: size (*	Caïeu: taille	Zehe: Größe	Diente: tamaño		
small	petit	klein	pequeño	Rose de Lautrec	3
medium	moyen	mittel	medio	Printanor	5
large	grand	groß	grande	Germidour	7
29. Clove: color of scale (*	Caïeu: couleur de la tunique	Zehe: Farbe der Schale	Diente: color de la piel		
white	blanc	weiß	blanco	Ramses	1
cream	crème	cremefarben	crema	Messidrome	2
pink	rose	rosa	rosa	Printanor	3
purple	violet	purpurn	violeta	Morasol, Sprint	4
brown	brun	braun	marrón	Corail	5
30. Clove: intensity of color of scale (*	Caïeu: intensité de la couleur de la tunique	Zehe: Intensität der Färbung der Schale	Diente: intensidad del color de la piel		
light	faible	gering	débil		3
medium	moyenne	mittel	media		5
dark	forte	stark	fuerte		7

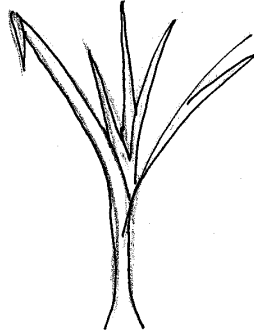
English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
31. Clove: anthocyanin stripes on external scale (*)	Caïeu: striures anthocyaniques de la tunique extérieure	Zehe: Anthocyanstreifen auf der Außenschale	Diente: estrías antocianicas en la piel externa		
absent	absentes	fehlend	ausentes	Ramses	1
present	présentes	vorhanden	presentes	Morasur	9
32. Clove: color of flesh (*)	Caïeu: couleur de la chair	Zehe: Farbe des Fleisches	Diente: color de la pulpa		
white	blanc	weiß	blanco	Printanor	1
yellowish	jaunâtre	gelblich	amarillento	Germidour	2
33. Time of harvest maturity (fall-over of 80% of plants) (*)	Époque de maturité de récolte (80% de plantes tombées)	Zeitpunkt der Erntereife (Umfallen bei 80% der Pflanzen)	Época de madurez para la cosecha (80% de las plantas caídos)		
very early	très précoce	sehr früh	muy temprana	Ramses	1
early	précoce	früh	temprana	Sprint	3
medium	moyenne	mittel	media	Germidour, Messidrome	5
late	tardive	spät	tardía	Printanor	7
very late	très tardive	sehr spät	muy tardía	Gayant	9
34. End of dormancy of clove in bulb (*) (+)	Levée de dormance des caïeux dans le bulbe	Ende der Keimruhe der Zehen in der Zwiebel	Final de la dormación de los dientes en el bulbo		
very early	très précoce	sehr früh	muy temprana	Ramses	1
early	précoce	früh	temprana	Sprint	3
medium	moyenne	mittel	media	Rose de Lautrec	5
late	tardive	spät	tardía	Fructidor	7
very late	très tardive	sehr spät	muy tardía	Gayant	9

VIII. Explanations on the Table of Characteristics

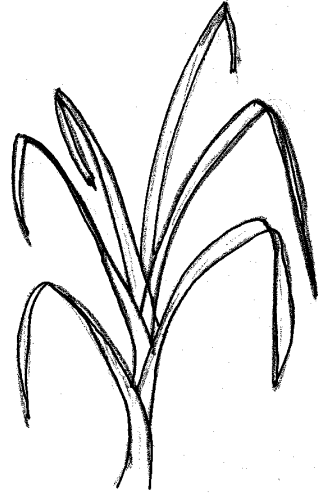
Ad. 2: Foliage: attitude



1
erect



2
erect to semi-erect



3
semi-erect

Ad. 11: Flowering stem: curvature

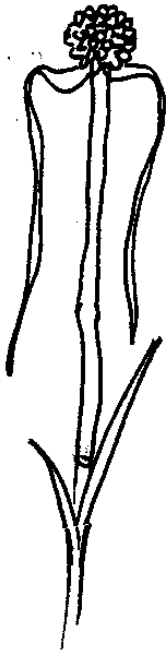


1
absent



9
present

Ad. 13: Flowering stem: bulblets

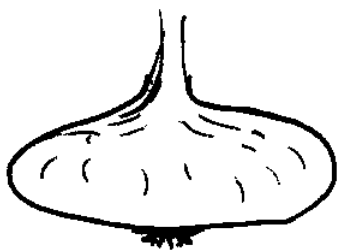


1
absent

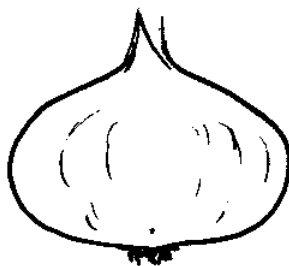


9
present

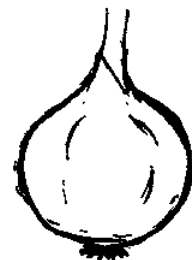
Ad. 15: Bulb: shape in longitudinal section



1
transverse elliptic



2
oblate



3
circular

Ad. 17: Bulb: position of cloves at tip of bulbs



1
inserted



2
at same level



3
exerted

Ad. 19: Bulb: shape of base



1
recessed

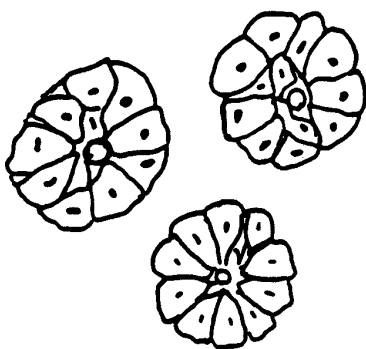


2
flat

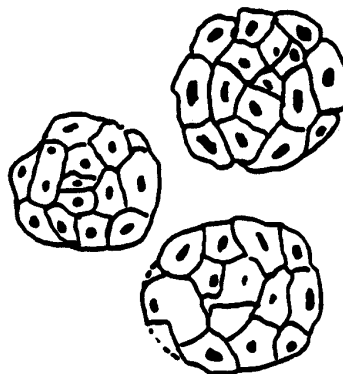


3
rounded

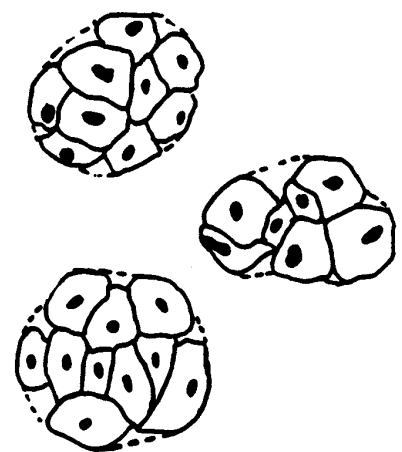
Ad. 26: Bulb: distribution of cloves



1
radial

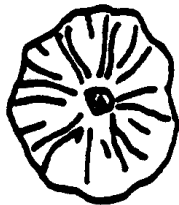


2
regular

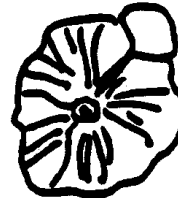


3
irregular

Ad. 27: Bulb: external cloves



1
absent



9
present



Ad. 34: End of dormancy of clove in bulb

After harvest, bulbs are stored in a room at an optimum temperature and humidity without being split into cloves. The end of dormancy is evaluated by observing the percentage of sprouted or dried bulbs.

IX. Literature

C. M. Messian, J. Cohat, J.P. Leroux, M. Pichon, A. Beyries. 1993: "Vegetatively Propagated Edible Alliums." Edition INRA, 222 pp.

X. Technical Questionnaire

	Reference Number (not to be filled in by the applicant)
<p>TECHNICAL QUESTIONNAIRE to be completed in connection with an application for plant breeders' rights</p>	
1. Species	<p><i>Allium sativum</i> L. GARLIC</p>
2. Applicant (Name and address)	
3. Proposed denomination or breeder's reference	

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

4.1 Origin of the clone

- | | |
|--|-----|
| (a) natural clone | [] |
| (b) clone from <i>in vitro</i> culture | [] |
| (c) clone from seedlings | [] |

4.2 Other information

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

Characteristics	Example Varieties	Note
5.1 Foliage: attitude (2)		
erect	Jolimont	1[]
erect to semi-erect	Printanor	2[]
semi-erect	Jardinor	3[]
5.2 Leaf: green color (3)		
light		3[]
medium	Messidrome	5[]
dark	Germidour	7[]

Characteristics	Example Varieties	Note
5.3 Pseudostem: flowering stem (10)		
absent	Germidour	1[]
present	Rose de Lautrec	9[]
5.4 Bulb: size (14)		
small	Fructidor	3[]
medium	Printanor	5[]
large	Messidrome	7[]
5.5 Bulb: shape in longitudinal section (15)		
transverse elliptic	Sprint	1[]
oblate	Germidour	2[]
circular	De Roumanie	3[]
5.6 Bulb: ground color of dry external scales (21)		
white	Ramses, Printanor	1[]
yellowish	Vigor Max, Vigor Supreme	2[]
reddish	Germidour	3[]
5.7 Bulb: external cloves (27)		
absent	Sprint, Sultop	1[]
present	Blanc de Beaumont, Morasol	9[]
5.8 Clove: size (28)		
small	Rose de Lautrec	3[]
medium	Printanor	5[]
large	Germidour	7[]

Characteristics	Example Varieties	Note
5.9 Clove: color of scale (29)		
white	Ramses	1[]
cream	Messidrome	2[]
pink	Printanor	3[]
purple	Morasol, Sprint	4[]
brown	Corail	5[]
5.10 Clove: color of flesh (32)		
white	Printanor	1[]
yellowish	Germidour	2[]
5.11 Time of harvest maturity (fall-over of 80% of plants) (33)		
very early	Ramses	1[]
early	Sprint, Emeraude	3[]
medium	Germidour, Messidrome	5[]
late	Printanor	7[]
very late	Gayant	9[]
5.12 End of dormancy of globe in bulb (34)		
very early	Ramses	1[]
early	Sprint	3[]
medium	Rose de Lautrec	5[]
late	Fructidor	7[]
very late	Gayant	9[]

6. Similar varieties and differences between these varieties

Denomination of similar variety	Characteristic in which the similar variety is different ^{o)}	State of expression of similar variety	State of expression of candidate variety
---------------------------------	--	--	--

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

7. Additional information which may help to distinguish the variety

7.1 Resistance to pests and diseases

7.2 Special conditions for the examination of the variety

7.3 Other information

8. Authorization for release

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

Yes [] No []

- (b) Has such authorization been obtained?

Yes [] No []

If the answer to that question is yes, please attach a copy of such an authorization.

[End of document]