



Calibration book

Allium cepa (Cepa Group and Aggregatum Group)
and *Allium oschaninii* O; Fedtsch. and hybrids between them

Onion and Shallot

Naktuinbouw calibration book

Allium cepa (Cepa Group), *Allium cepa* (Aggregatum Group) and
Allium oschaninii O; Fedtsch. and hybrids between them
onion, echalion, shallot, grey shallot

Version 1

© Naktuinbouw, December 2010

© Naktuinbouw 2010

No part of this electronic/digital edition may be reproduced in any form, by print, photoprint, microfilm or any other means without written permission from Naktuinbouw.

Introduction

In front of you, you find the Naktuinbouw calibration book onion/shallot. This book may be used as guidance for the completion of application forms, the describing of varieties or the understanding of variety descriptions. This book can not replace the skill needed to make a variety description, but may serve as support.

Sources used

The basis for this book is the CPVO protocol CPVO-TP/46/2 which in turn is based on UPOV Guideline TG/046/7. Please also use these sources for reference when using this calibration book. The application of this calibration book is based on the general UPOV principles on the definitions and use of characteristics of variety descriptions (UPOV TG/1/3).

Application methodology

The UPOV system is based on the expression of characteristics that are related to the expression values of example varieties. In the calibration book you find two types of characteristics; visually assessed characteristics and measured characteristics.

The value of the visually assessed characteristics can be compared with the visual value of the expression of example varieties. In the calibration book you may find drawings or pictures to assist in the decision on the applicable expression.

For measured characteristics this is more complicated as in many cases the value of the measurements is depending on the (climatical) conditions of the trials. The use of example varieties in these cases is indispensable. The same applies for those visually assessed characteristics that are prone to influence by climate (e.g. anthocyanin coloration). In this calibration book these example varieties are only included for the characteristics that appear in the Technical Questionnaire. Others are not included as many prefer their own set of example varieties, but may be found in the relevant CPVO protocol.

Website

The CPVO and UPOV documents mentioned above can be found on the Naktuinbouw website (<http://www.naktuinbouw.nl/onderwerp/kalibratieboeken>). On this website you can also find announcements of possible modifications of the published calibration books.

Helpdesk

For possible remarks, suggestions and questions on the calibration books and the website, you may contact Naktuinbouw at our email address: kalibratieboek@naktuinbouw.nl

Contents

Nr.	Part	Characteristic
1	Plant	number of leaves per pseudostem
2	Foliage	attitude
3	Foliage	waxiness
4	Foliage	intensity of green colour
5	Foliage	cranking
6.1	Leaf	<u>Onion varieties only</u> : Length
6.2	Leaf	<u>Shallot varieties only</u> : Length
7.1	Leaf	<u>Onion varieties only</u> : Diameter
7.2	Leaf	<u>Shallot varieties only</u> : Diameter
8	Pseudostem	<u>Onion varieties only</u> : Length (up to highest green leaf)
9	Pseudostem	<u>Onion varieties only</u> : Diameter (at mid-point of length)
10	Bulb	<u>Seed propagated varieties only</u> : tendency to split into bulblets (with dry skin around each bulblet)
11	Bulb	degree of splitting into bulblets (with dry skin around each bulblet)
12.1	Bulb	<u>Onion varieties only</u> : Size
12.2	Bulblet	<u>Shallot varieties only</u> : Size
13.1	Bulb	<u>Onion varieties only</u> : Height
13.2	Bulblet	<u>Shallot varieties only</u> : Height
14.1	Bulb	<u>Onion varieties only</u> : Diameter
14.2	Bulblet	<u>Shallot varieties only</u> : Diameter
15.1	Bulb	<u>Onion varieties only</u> : Ratio height/diameter
15.2	Bulblet	<u>Shallot varieties only</u> : Ratio height/diameter
16	Bulb/Bulblet	position maximum diameter
17	Bulb/Bulblet	width of neck
18	Bulb/Bulblet	shape (in longitudinal section)
19	Bulb/Bulblet	<u>Onion varieties only</u> : shape of stem end (as for 18)
20	Bulb/Bulblet	shape of root end (as for 18)
21	Bulb/Bulblet	adherence of dry skin after harvest
22	Bulb/Bulblet	thickness of dry skin
23	Bulb/Bulblet	base colour of dry skin
24	Bulb/Bulblet	<u>Excluding varieties with white dry skin</u> : intensity of base colour of dry skin
25	Bulb/Bulblet	hue of colour of dry skin (in addition to base colour)
26	Bulb/Bulblet	coloration of epidermis of fleshy scales
27	Bulb/Bulblet	number of growing points per kg
28	Bulb/Bulblet	dry matter content
29		<u>Onion varieties only</u> : tendency to bolting in <u>spring</u> sown trials
30		<u>Onion varieties only</u> : time of beginning of bolting in <u>spring</u> sown trials
31		<u>Onion varieties only</u> : tendency to bolting in <u>autumn</u> sown trials
32		<u>Onion varieties only</u> : time of beginning of bolting in <u>autumn</u> sown trials
33		<u>Onion varieties only</u> : time of harvest maturity for <u>autumn</u> sown trials (foliage fall-over in 80% of plants)
34.1		<u>Onion varieties only</u> : time of harvest maturity for <u>spring</u> sown trials (foliage fall-over in 80% of plants)

34.2 Shallot varieties only: time of harvest maturity (as for 33)

35 time of sprouting during storage

36 male sterility

1 Plant: number of leaves per pseudostem

Grouping characteristic: no.

Type of characteristic: QN – Quantitative characteristic.

Type of observation: VG – Single visual assessment of a group of plants or parts of plants; in practice a single assessment of an average single plant or part of plant.

Stage of observation: On the full grown plant, when bulb formation has started, but before foliage fall-over.

Method of observation: Count the number of leaves. Pay attention: one or two leaves may already have died back. Translate the number of leaves to a note by means of example varieties.

Notes, states of expression and example varieties:

- 1: very few
- 2: very few to few
- 3: few SY300 (O)
- 4: few to medium
- 5: medium The Kelsae (O)
- 6: medium to many
- 7: many Yellow sweet spanish (O)
- 8: many to very many
- 9: very many

1 Plant: number of leaves per pseudostem



5: medium



6: medium to many



7: many



8: many to very many

2 Foliage: attitude

Grouping characteristic: no.

Type of characteristic: QN – Quantitative characteristic.

Type of observation: VG – Single visual assessment of a group of plants or parts of plants; in practice a single assessment of an average single plant or part of plant.

Stage of observation: Full grown plant, before foliage fall-over.

Method of observation: Single observation of the sample (general impression). Horizontal foliage seems only to occur at some vegetatively propagated shallot varieties.

Notes and states of expression:

- 1: erect
- 2: erect to semi-erect
- 3: semi-erect
- 4: semi-erect to horizontal
- 5: horizontal



1: erect



2: erect to semi-erect



3: semi-erect



4: semi-erect to horizontal

3 Foliage: waxiness

Grouping characteristic: no.

Type of characteristic: **QN** – Quantitative characteristic.

Type of observation: **VG** – Single visual assessment of a group of plants or parts of plants; in practice a single assessment of an average single plant or part of plant.

Stage of observation: Full grown plant, before foliage fall-over.

Method of observation: By trying to remove the waxy layer by hand, one gets a good impression of the thickness of the waxy layer.

In rainy years, a rather thin waxy layer may more or less wash off. In hot and dry weather, on the contrary, the waxy layer becomes stronger. Therefore, the use of example varieties is important.

Notes and states of expression:

- 1: absent or very weak
- 2: very weak to weak
- 3: weak
- 4: weak to medium
- 5: medium
- 6: medium to strong
- 7: strong
- 8: strong to very strong
- 9: very strong

3 Foliage: waxiness



1: absent to very weak

3: weak

5: medium

7: strong

9: very strong

4 Foliage: intensity of green colour

Grouping characteristic: no.

Type of characteristic: QN – Quantitative characteristic.

Type of observation: VG – Single visual assessment of a group of plants or parts of plants; in practice a single assessment of an average single plant or part of plant.

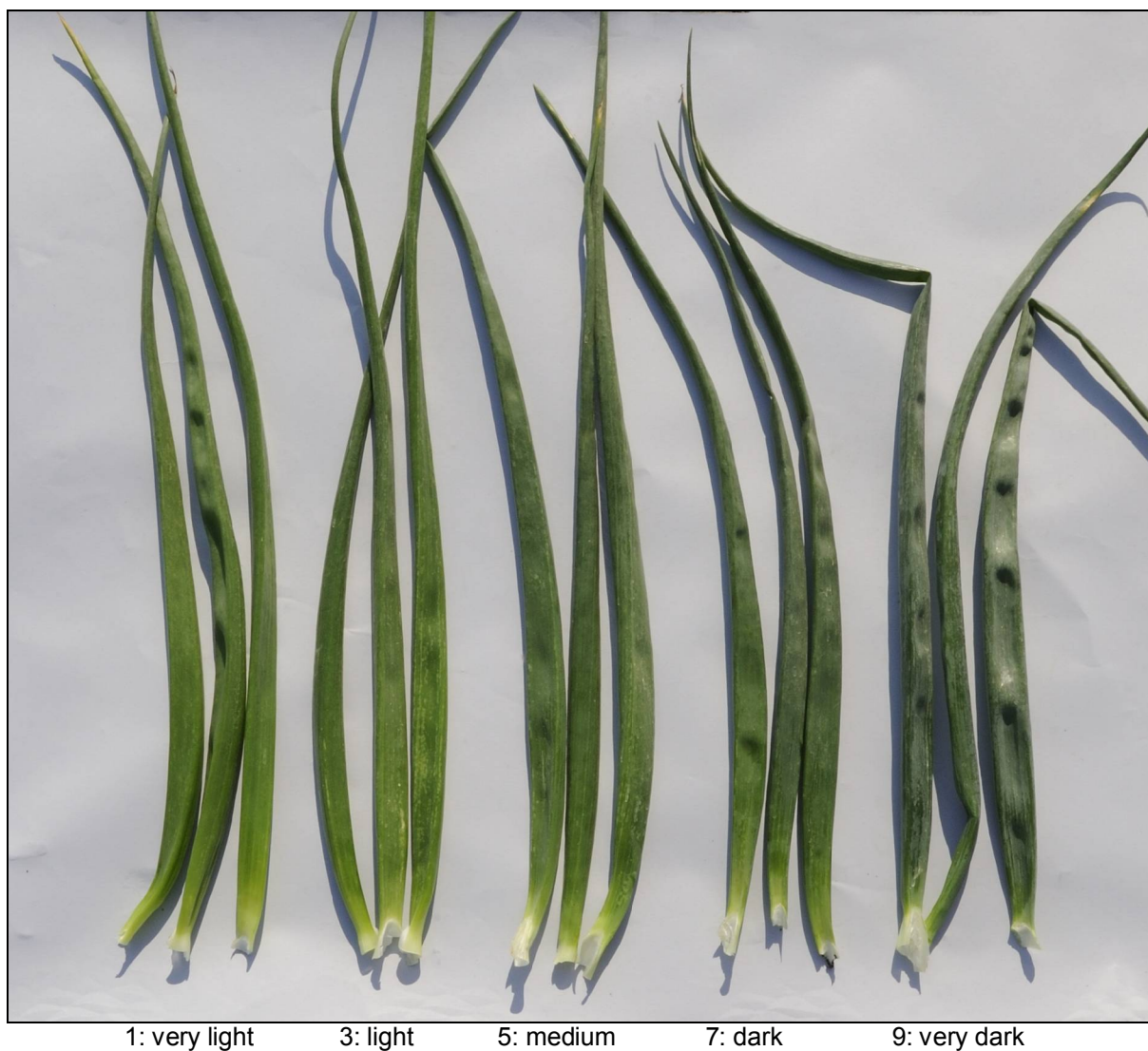
Stage of observation: Full grown plant, before foliage fall-over.

Method of observation: Single observation per sample (general impression). Assess the intensity of the green colour including the waxy layer.

Notes, states of expression and example varieties:

- | | |
|------------------------|---|
| 1: very light | Bretor (S) |
| 2: very light to light | |
| 3: light | Guimar (O), Yellow sweet Spanish (O), Tropix (O) |
| 4: light to medium | |
| 5: medium | Caribo (O), Texas grano 502 (O), Golden Gourmet (S) |
| 6: medium to dark | |
| 7: dark | Hikeeper (O), La Reine (O), Sant's (S) |
| 8: dark to very dark | |
| 9: very dark | |

4 Foliage: intensity of green colour



This image serves only to illustrate the variation present in the crop and should not be used as an absolute reference.

5 Foliage: cranking

Grouping characteristic: no.

Type of characteristic: QN – Quantitative characteristic.

Type of observation: VG – Single visual assessment of a group of plants or parts of plants; in practice a single assessment of an average single plant or part of plant.

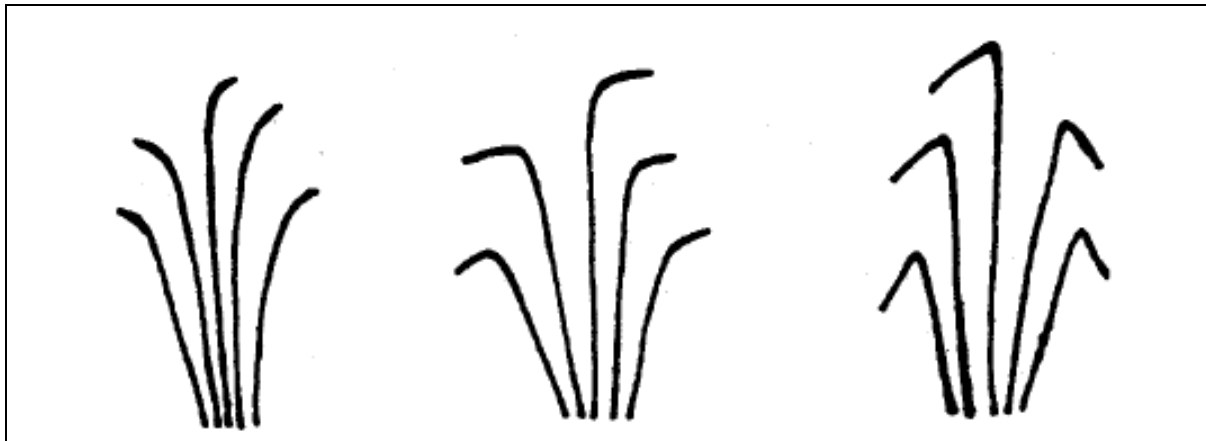
Stage of observation: Full grown plant, just before foliage fall-over. Do not make the observation too early, because cranking is getting stronger during the growing season.

Method of observation: Observe using example varieties for calibration.

Notes and states of expression:

- 1: absent or weak
- 2: intermediate
- 3: strong

CPVO explanation:



1: absent or weak

2: intermediate

3: strong

5 Foliage: cranking



1: absent or weak



2: intermediate



3: strong

6.1 Onion varieties only: Leaf: length

Grouping characteristic: no.

Type of characteristic: **QN** – Quantitative characteristic.

Type of observation: **MS/VG** – Choose between

- Calculated average of the measurement of 60 plants or parts of plants and
- Single visual assessment of a group of plants or parts of plants; in practice a single assessment of an average single plant or part of plant.

Stage of observation: Full grown plant, before foliage fall-over.

Method of observation: use example varieties for calibration.

Notes and states of expression:

- 1: very short
- 2: very short to short
- 3: short
- 4: short to medium
- 5: medium
- 6: medium to long
- 7: long
- 8: long to very long
- 9: very long

6.2 Shallot varieties only: Leaf: length

Grouping characteristic: no.

Type of characteristic: **QN** – Quantitative characteristic.

Type of observation: **MS/VG** – Choose between

- Calculated average of the measurement of 40 (vegetatively propagated varieties) or 60 (seed propagated varieties) plants or parts of plants and
- Single visual assessment of a group of plants or parts of plants; in practice a single assessment of an average single plant or part of plant.

Stage of observation: Full grown plant, before foliage fall-over.

Method of observation: Use example varieties for calibration.

Notes and states of expression:

- 1: very short
- 2: very short to short
- 3: short
- 4: short to medium
- 5: medium
- 6: medium to long
- 7: long
- 8: long to very long
- 9: very long

6.2 Shallot varieties only: Leaf: length



1: very short



3: short



5: medium



7: long

6.2 Shallot varieties only: Leaf: length



9: very long

7.1 Onion varieties only: Leaf: diameter

Grouping characteristic: no.

Type of characteristic: **QN** – Quantitative characteristic.

Type of observation: **VG** – Single visual assessment of a group of plants or parts of plants; in practice a single assessment of an average single plant or part of plant.

Stage of observation: Full grown plant, before foliage fall-over.

Method of observation: Use example varieties for calibration

Notes and states of expression:

- 1: very small
- 2: very small to small
- 3: small
- 4: small to medium
- 5: medium
- 6: medium to large
- 7: large
- 8: large to very large
- 9: very large

7.1 Onion varieties only: Leaf: diameter



1: very small



3: small

These images serve only to illustrate the variation present in the crop and should not be used as an absolute reference.

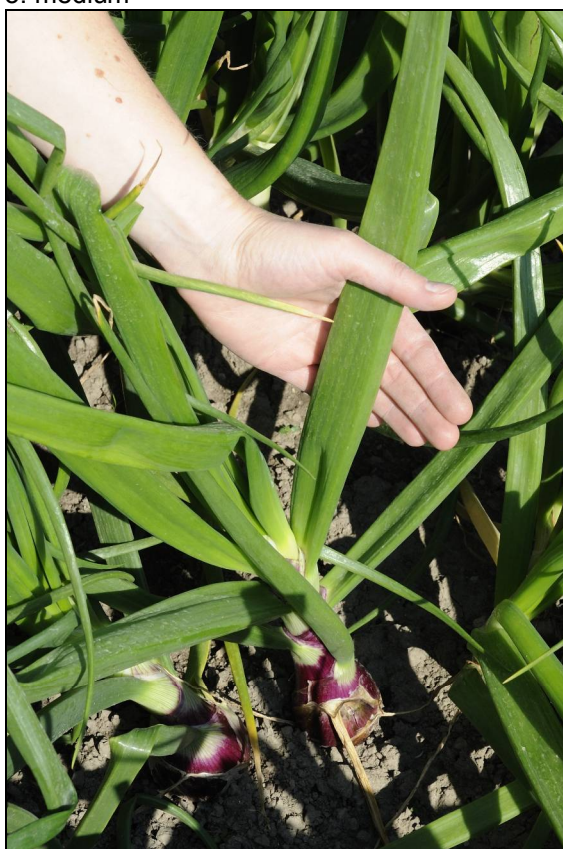
7.1 Onion varieties only: Leaf: diameter



5: medium



7: large



9: very large

7.2 Shallot varieties only: Leaf: diameter

Grouping characteristic: no.

Type of characteristic: QN – Quantitative characteristic.

Type of observation: VG – Single visual assessment of a group of plants or parts of plants; in practice a single assessment of an average single plant or part of plant.

Stage of observation: Full grown plant, before foliage fall-over.

Method of observation: Use example varieties for calibration.

Notes and states of expression:

- 1: very small
- 2: very small to small
- 3: small
- 4: small to medium
- 5: medium
- 6: medium to large
- 7: large
- 8: large to very large
- 9: very large



1: very small



3: small

These images serve only to illustrate the variation present in the crop and should not be used as an absolute reference.

7.2 Shallot varieties only: Leaf: diameter



5: medium



7: large



9: very large

These images serve only to illustrate the variation present in the crop and should not be used as an absolute reference.

8 Onion varieties only: Pseudostem: length (up to highest green leaf)

Grouping characteristic: no.

Type of characteristic: QN – Quantitative characteristic.

Type of observation: MS/VG – Choose between

- Calculated average of the measurement of 60 plants or parts of plants and
- Single visual assessment of a group of plants or parts of plants; in practice a single assessment of an average single plant or part of plant.

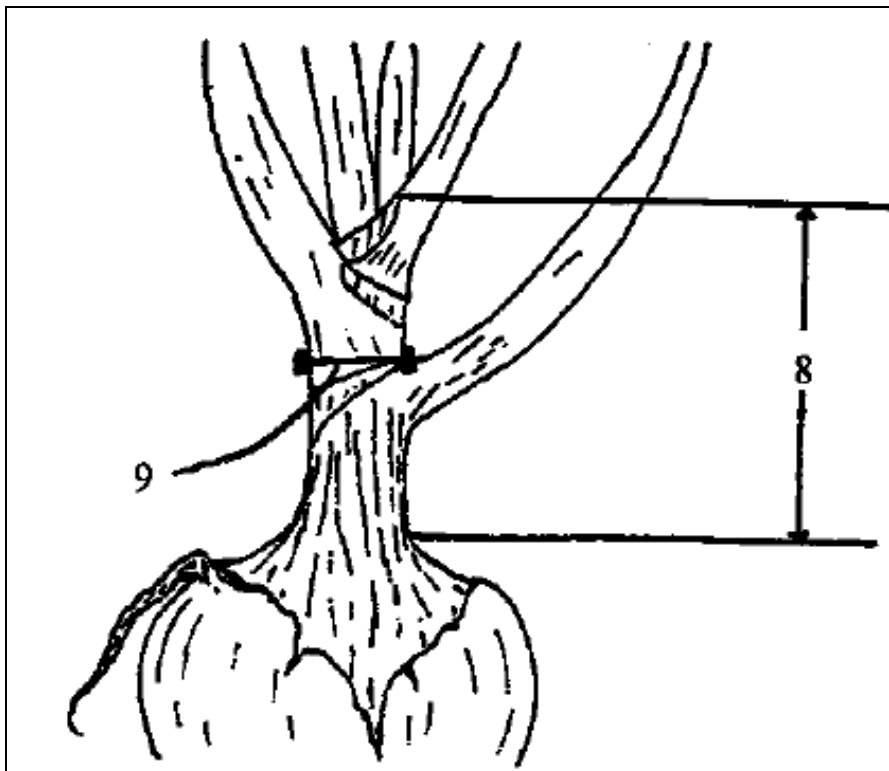
Stage of observation: Full grown plant, before foliage fall-over.

Method of observation: Single observation per sample (general impression).

Notes and states of expression:

- 1: very short
- 2: very short to short
- 3: short
- 4: short to medium
- 5: medium
- 6: medium to long
- 7: long
- 8: long to very long
- 9: very long

CPVO explanation:



8 Onion varieties only: Pseudostem: length (up to highest green leaf)



2: very short to short 3: short 5: medium 6: medium to long 8: long to very long 9: very long

9 Onion varieties only: Pseudostem: diameter (at mid-point of length)

Grouping characteristic: no.

Type of characteristic: QN – Quantitative characteristic.

Type of observation: MS/VG – Choose between

- Calculated average of the measurement of 60 plants or parts of plants and
- Single visual assessment of a group of plants or parts of plants; in practice a single assessment of an average single plant or part of plant.

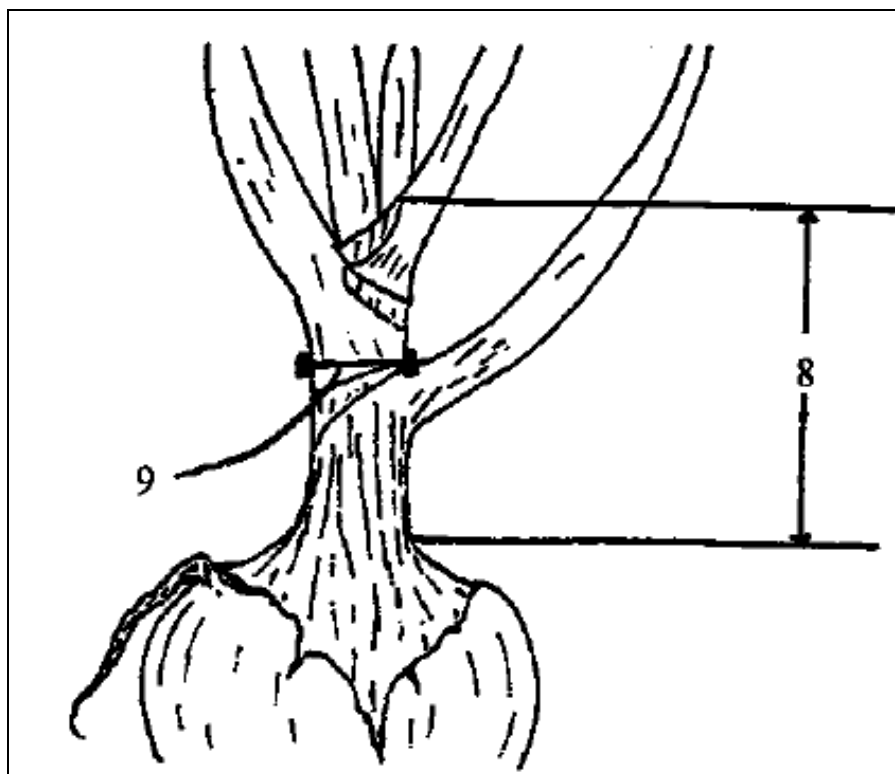
Stage of observation: Full grown plant, before foliage fall-over.

Method of observation: Use example varieties for calibration.

Notes and states of expression:

- 1: very small
- 2: very small to small
- 3: small
- 4: small to medium
- 5: medium
- 6: medium to large
- 7: large
- 8: large to very large
- 9: very large

CPVO explanation:



9 Onion varieties only: Pseudostem: diameter (at mid-point of length)

1: very small

3: small

5: medium

7: large

9: very large

This image serves only to illustrate the variation present in the crop and should not be used as an absolute reference.

10 Seed propagated varieties only: Bulb: Tendency to split into bulblets (with dry skin around each bulblet)

Grouping characteristic: no.

Type of characteristic: **QN** – Quantitative characteristic.

Type of observation: **VG** – Single visual assessment of a group of plants or parts of plants; in practice a single assessment of an average single plant or part of plant.

Stage of observation: to be judged on material directly grown from seed.
At harvest maturity, during harvest.

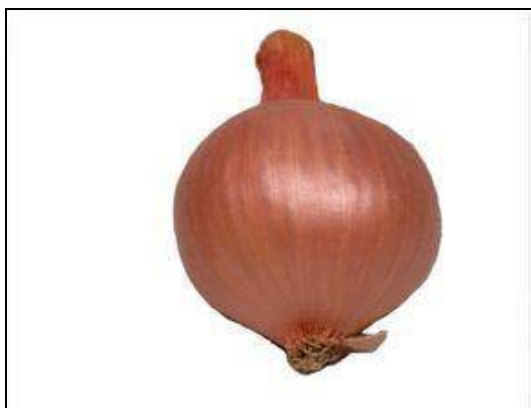
Method of observation: Harvest the plants one by one and directly count the number of bulblets on the plant. Relate to example varieties.

Notes, states of expression and example varieties:

1: absent or very weak	Cuisse de poulet du Poitou (O), Lagos (O)
2: very weak to weak	
3: weak	
4: weak to medium	
5: medium	Mirage (S)
6: medium to strong	
7: strong	Bonilla (S), Creation (S), Longor (S)
8: strong to very strong	
9: very strong	Delvad (S), Rox (S), Tropix (S)

10 Seed propagated varieties only: Bulb: Tendency to split into bulblets (with dry skin around each bulblet)

CPVO explanation:



1: absent or very weak



5: medium



9: very strong

11 Bulb: degree of splitting into bulblets (with dry skin around each bulblet)

Grouping characteristic: yes.

Type of characteristic: **QN** – Quantitative characteristic.

Type of observation: **VG** – Single visual assessment of a group of plants or parts of plants; in practice a single assessment of an average single plant or part of plant.

Stage of observation: to be judged on material directly grown from submitted bulbs or from replanted bulbs harvested from seed-propagated varieties.
At harvest maturity, during harvest.

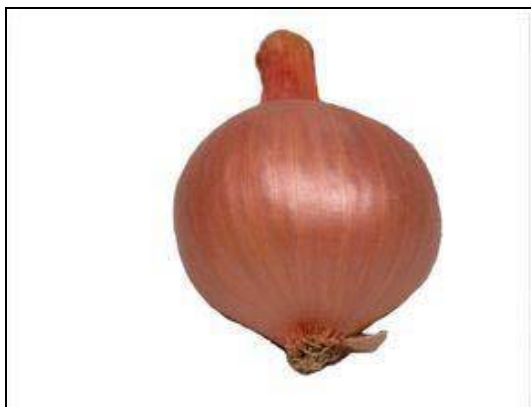
Method of observation: Harvest the plants one by one and directly count the number of bulblets on the plant. Relate to example varieties.

Notes, states of expression and example varieties:

- | | |
|--------------------------|--------------------------------|
| 1: absent or very weak | Cuisse de Poulet du Poitou (O) |
| 2: very weak to weak | |
| 3: weak | |
| 4: weak to medium | |
| 5: medium | Sant's (S) |
| 6: medium to strong | |
| 7: strong | |
| 8: strong to very strong | |
| 9: very strong | Griselle (S) |

11 Bulb: degree of splitting into bulblets (with dry skin around each bulblet)

CPVO explanation:



1: absent or very weak



5: medium



9: very strong

12.1 Onion varieties only: Bulb: size

Grouping characteristic: no.

Type of characteristic: QN – Quantitative characteristic.

Type of observation: VG – Single visual assessment of a group of plants or parts of plants; in practice a single assessment of an average single plant or part of plant.

Stage of observation: After harvest, but before it starts sprouting during storage.

Method of observation: Single observation per sample (general impression). Observe that onions and shallots grow best in the appropriate day length conditions. Describe this characteristic as you observe in your situation. The use of example varieties is strongly recommended.

Notes, states of expression and example varieties:

1: very small

2: very small to small

3: small

4: small to medium

5: medium

Lagos

6: medium to large

7: large

The Kelsae

8: large to very large

9: very large

12.1 Onion varieties only: Bulb: size

This image serves only to illustrate the variation present in the crop and should not be used as an absolute reference.

12.2 Shallot varieties only: Bulblet: size

Grouping characteristic: no.

Type of characteristic: QN – Quantitative characteristic.

Type of observation: VG – Single visual assessment of a group of plants or parts of plants; in practice a single assessment of an average single plant or part of plant.

Stage of observation: to be judged on material directly grown from submitted bulbs or from replanted bulbs harvested from seed-propagated varieties. After harvest, but before bulblet starts sprouting during storage.

Method of observation: Single observation per sample (general impression). Observe that onions and shallots grow best in the appropriate day length conditions. Describe this characteristic as you observe in your situation. The use of example varieties is strongly recommended.

Notes, states of expression and example varieties:

- | | |
|------------------------|----------------------|
| 1: very small | |
| 2: very small to small | |
| 3: small | Atlas |
| 4: small to medium | |
| 5: medium | Spring Field, Topper |
| 6: medium to large | |
| 7: large | Delicato, Santé |
| 8: large to very large | |
| 9: very large | |

13.1 Onion varieties only: Bulb: height

Grouping characteristic: no.

Type of characteristic: **QN** – Quantitative characteristic.

Type of observation: **MS/VG** – Choose between

- Calculated average of the measurement of 60 plants or parts of plants and
- Single visual assessment of a group of plants or parts of plants; in practice a single assessment of an average single plant or part of plant.

Stage of observation: After harvest, but before bulb starts sprouting during storage.

Method of observation: Use example varieties for calibration.

Notes and states of expression:

- 1: very short
- 2: very short to short
- 3: short
- 4: short to medium
- 5: medium
- 6: medium to tall
- 7: tall
- 8: tall to very tall
- 9: very tall

13.2 Shallot varieties only: Bulblet: height

Grouping characteristic: no.

Type of characteristic: **QN** – Quantitative characteristic.

Type of observation: **MS/VG** – Choose between

- Calculated average of the measurement of 40 (vegetatively propagated varieties) or 60 (seed propagated varieties) plants or parts of plants and
- Single visual assessment of a group of plants or parts of plants; in practice a single assessment of an average single plant or part of plant.

Stage of observation: to be judged on material directly grown from submitted bulbs or from replanted bulbs harvested from seed-propagated varieties.
After harvest, but before bulb starts sprouting during storage.

Method of observation: Use example varieties for calibration.

Notes and states of expression:

- 1: very short
- 2: very short to short
- 3: short
- 4: short to medium
- 5: medium
- 6: medium to tall
- 7: tall
- 8: tall to very tall
- 9: very tall

14.1 Onion varieties only: Bulb: diameter

Grouping characteristic: no.

Type of characteristic: **QN** – Quantitative characteristic.

Type of observation: **MS/VG** – Choose between

- Calculated average of the measurement of 60 plants or parts of plants and
- Single visual assessment of a group of plants or parts of plants; in practice a single assessment of an average single plant or part of plant.

Stage of observation: After harvest, but before bulb starts sprouting during storage.

Method of observation: Use example varieties for calibration.

Notes and states of expression:

- 1: very small
- 2: very small to small
- 3: small
- 4: small to medium
- 5: medium
- 6: medium to large
- 7: large
- 8: large to very large
- 9: very large

14.2 Shallot varieties only: Bulblet: diameter

Grouping characteristic: no.

Type of characteristic: QN – Quantitative characteristic.

Type of observation: MS/VG – Choose between

- Calculated average of the measurement of 40 (vegetatively propagated varieties) or 60 (seed propagated varieties) plants or parts of plants and
- Single visual assessment of a group of plants or parts of plants; in practice a single assessment of an average single plant or part of plant.

Stage of observation: to be judged on material directly grown from submitted bulbs or from replanted bulbs harvested from seed-propagated varieties.
After harvest, but before bulb starts sprouting during storage.

Method of observation: Observe that onions and shallots grow best in the appropriate day length conditions. Describe this characteristic as you observe in your situation. The use of example varieties is strongly recommended.

Notes and states of expression:

- 1: very small
- 2: very small to small
- 3: small
- 4: small to medium
- 5: medium
- 6: medium to large
- 7: large
- 8: large to very large
- 9: very large

15.1 Onion varieties only: Bulb: ratio height/diameter

Grouping characteristic: no.

Type of characteristic: QN – Quantitative characteristic.

Type of observation: MS/VG – Choose between

- Calculated average of the measurement of 60 plants or parts of plants and
- Single visual assessment of a group of plants or parts of plants; in practice a single assessment of an average single plant or part of plant.

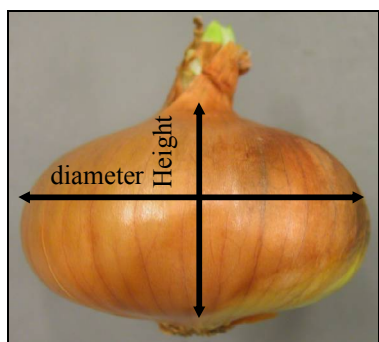
Stage of observation: After harvest, but before bulb starts sprouting during storage.

Method of observation: Single observation per sample (general impression). Observe that onions and shallots grow best in the appropriate day length conditions. Describe this characteristic as you observe in your situation. The use of example varieties is strongly recommended.

Notes and states of expression:

- 1: very small
- 2: very small to small
- 3: small
- 4: small to medium
- 5: medium
- 6: medium to large
- 7: large
- 8: large to very large
- 9: very large

15.1 Onion varieties only: Bulb: ratio height/diameter



2: very small to small



4: small to medium



5: medium



5: medium



8: large to very large

15.2 Shallot varieties only: Bulblet: ratio height/diameter

Grouping characteristic: no.

Type of characteristic: QN – Quantitative characteristic.

Type of observation: MS/VG – Choose between

- Calculated average of the measurement of 40 (vegetatively propagated varieties) or 60 (seed propagated varieties) plants or parts of plants and
- Single visual assessment of a group of plants or parts of plants; in practice a single assessment of an average single plant or part of plant.

Stage of observation: to be judged on material directly grown from submitted bulbs or from replanted bulbs harvested from seed-propagated varieties. After harvest, but before bulb starts sprouting during storage.

Method of observation: Single observation per sample (general impression). Observe that onions and shallots grow best in the appropriate day length conditions. Describe this characteristic as you observe in your situation. The use of example varieties is strongly recommended.

Notes and states of expression:

- 1: very small
- 2: very small to small
- 3: small
- 4: small to medium
- 5: medium
- 6: medium to large
- 7: large
- 8: large to very large
- 9: very large

16 Bulb/Bulblet: position of maximum diameter

Grouping characteristic: no.

Type of characteristic: QN – Quantitative characteristic.

Type of observation: VG – Single visual assessment of a group of plants or parts of plants; in practice a single assessment of an average single plant or part of plant.

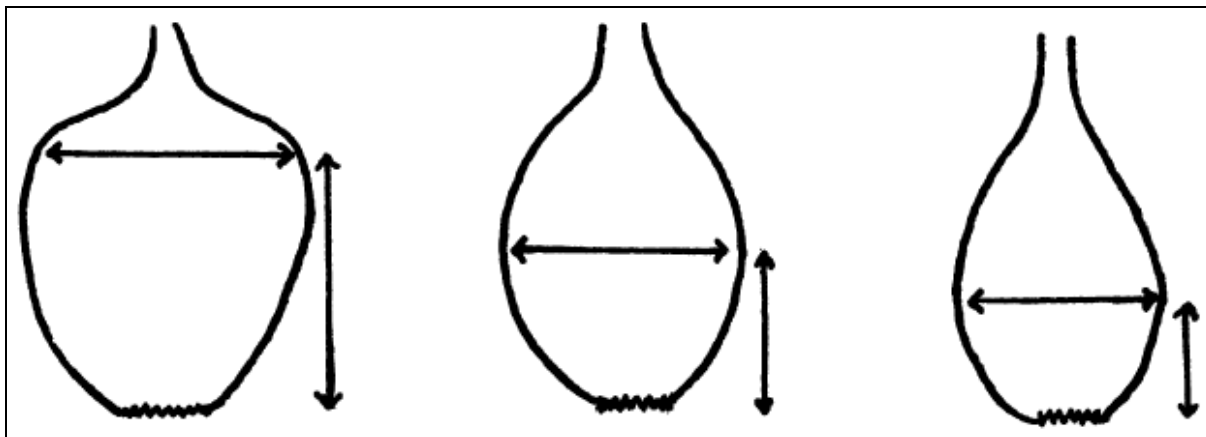
Stage of observation: After harvest, but before bulb starts sprouting during storage. For seed propagated shallots to be judged on material directly grown from seed.

Method of observation: Single observation per sample (general impression). Observe that onions and shallots grow best in the appropriate day length conditions. Describe this characteristic as you observe in your situation. The use of example varieties is strongly recommended.

Notes and states of expression:

- 1: towards stem end
- 2: at middle
- 3: towards root end

CPVO explanation:

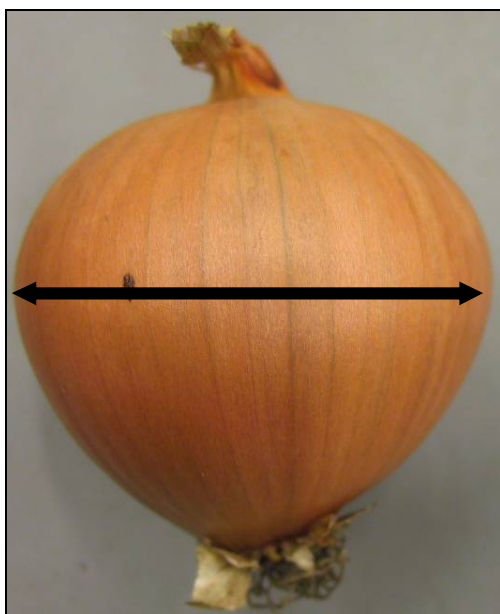


1: towards stem end

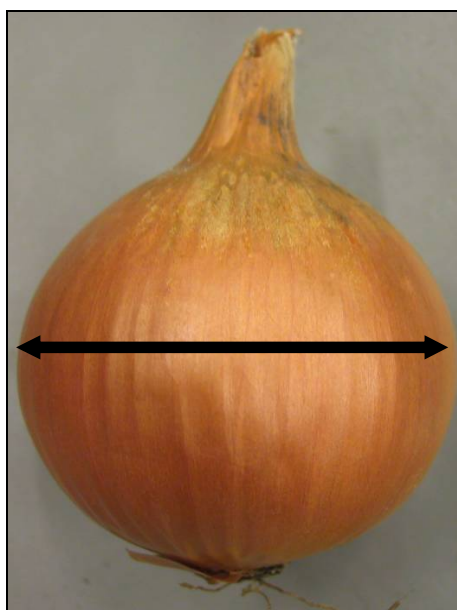
2: at middle

3: towards root end

16 Bulb/Bulblet: position of maximum diameter



1: towards stem end



2: at middle

17 Bulb/Bulblet: width of neck

Grouping characteristic: no.

Type of characteristic: QN – Quantitative characteristic.

Type of observation: VG – Single visual assessment of a group of plants or parts of plants; in practice a single assessment of an average single plant or part of plant.

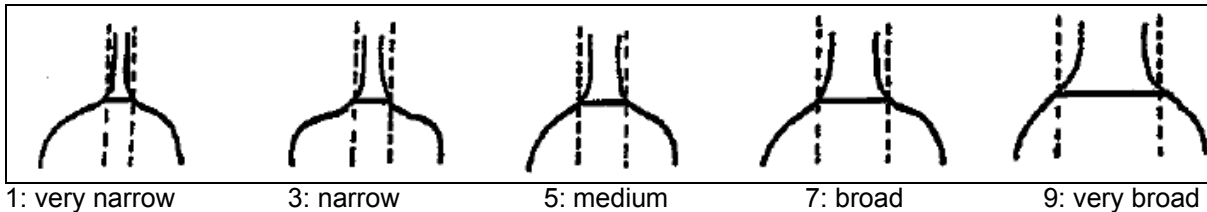
Stage of observation: After harvest, but before bulb starts sprouting during storage.

Method of observation: Observe that onions and shallots grow best in the appropriate day length conditions. Describe this characteristic as you observe in your situation. The use of example varieties is strongly recommended.

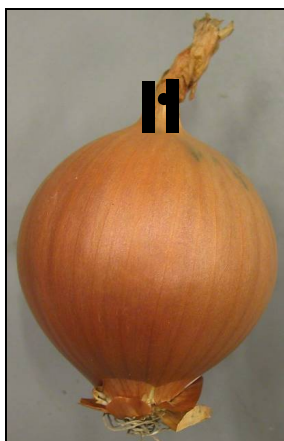
Notes and states of expression:

- 1: very narrow
- 2: very narrow to narrow
- 3: narrow
- 4: narrow to medium
- 5: medium
- 6: medium to broad
- 7: broad
- 8: broad to very broad
- 9: very broad

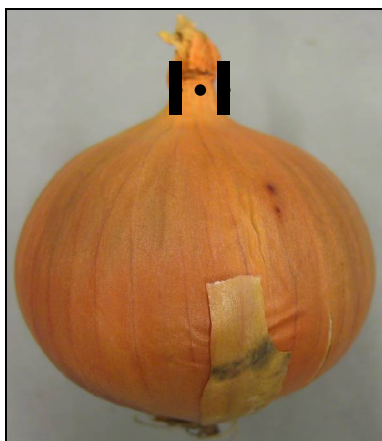
CPVO explanation:



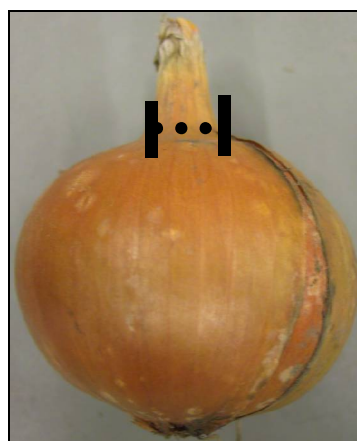
17 Bulb/Bulblet: width of neck



3: narrow



5: medium



7: broad

18 Bulb/Bulblet: shape (in longitudinal section)

Grouping characteristic: yes.

Type of characteristic: PQ – Pseudo-qualitative characteristic.

Type of observation: VG – Single visual assessment of a group of plants or parts of plants; in practice a single assessment of an average single plant or part of plant.

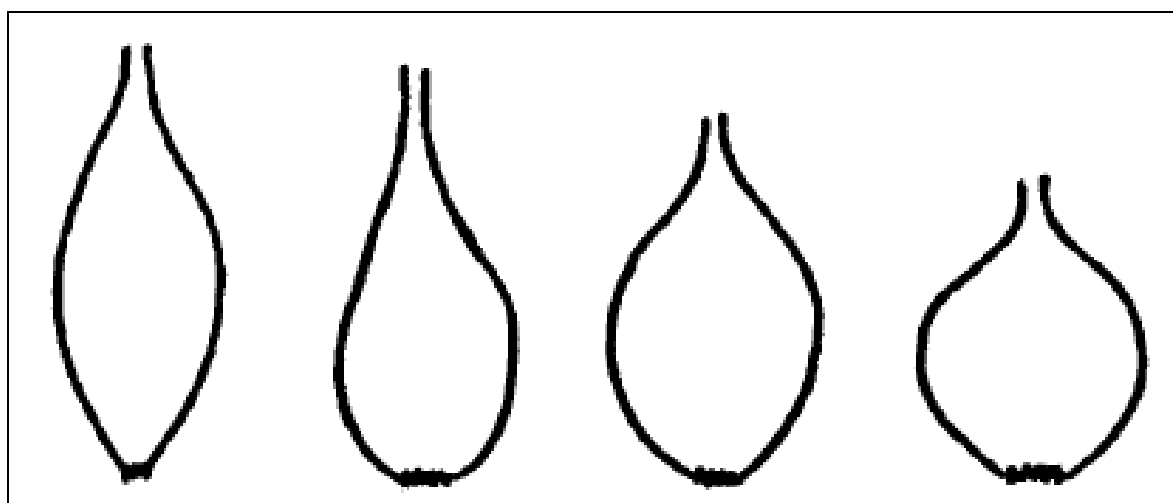
Stage of observation: After harvest, but before bulb starts sprouting during storage.

Method of observation: Observe that onions and shallots grow best in the appropriate day length conditions. Describe this characteristic as you observe in your situation. The use of example varieties is strongly recommended.

Notes, states of expression and example varieties:

1: elliptic	Owa (O), Longor (S)
2: medium ovate	Birnförmige (O), Rossa lunga di Firenze (O), Breton (S)
3: broad elliptic	Ailsa Craig (O), Beacon (O), Hiball (O), Vigarmor (S)
4: circular	Lagos (O), Pikant (S)
5: broad ovate	Hysam (O), Arvro (S)
6: broad obovate	Lila (O), Texas grano 502 (O)
7: rhombic	Zittauer gelbe (O)
8: transverse medium elliptic	Sturka (O), Stuttgarter Riesen (O), Atlantic (S), Golden Gourmet (S)
9: transverse narrow elliptic	Brunswijker (O), De Moissac (O), Paille des vertus (O), Pompei (O)

CPVO explanation:



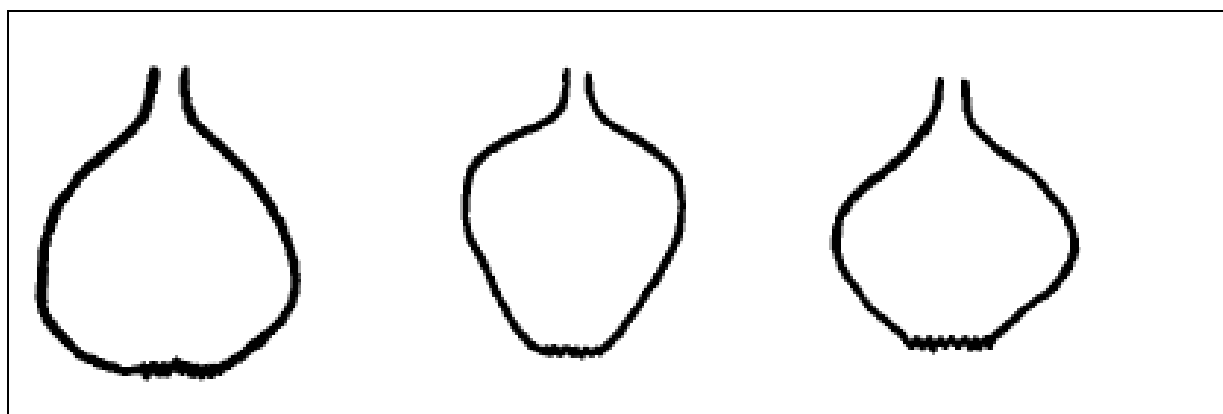
1: elliptic

2: medium ovate

3: broad elliptic

4: circular

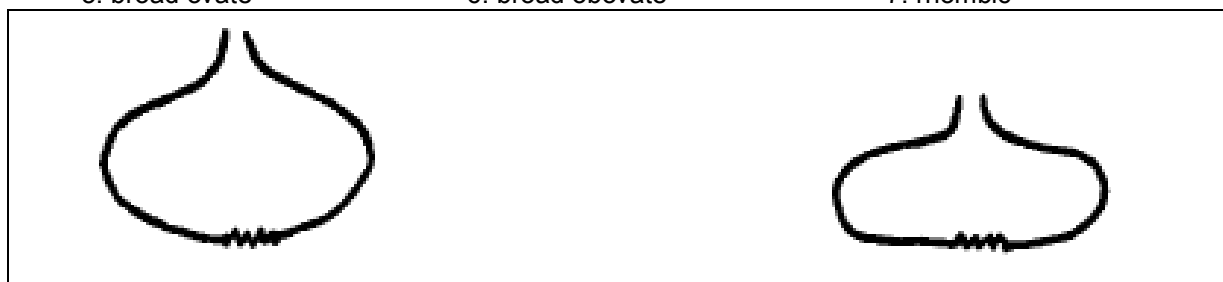
18 Bulb/Bulblet: shape (in longitudinal section)



5: broad ovate

6: broad obovate

7: rhombic



8: transverse medium elliptic

9: transverse narrow elliptic

18 Bulb/Bulblet: shape (in longitudinal section)



1: elliptic



2: medium ovate



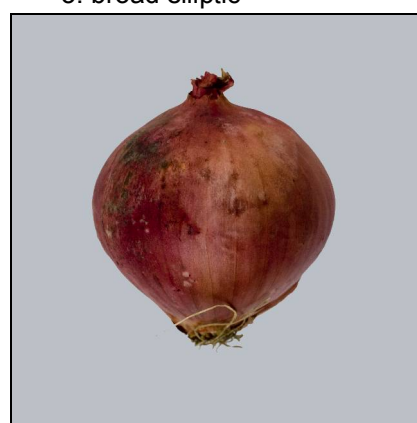
3: broad elliptic



4: circular



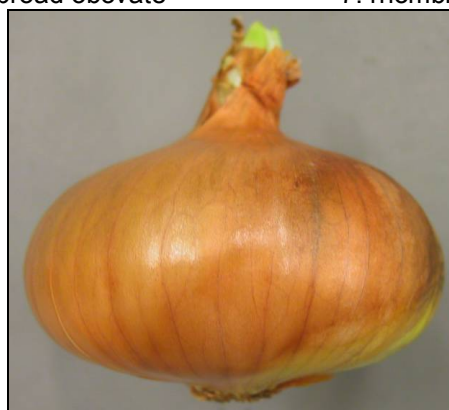
6: broad obovate



7: rhombic



8: transverse medium elliptic



9: transverse narrow elliptic

19 Onion varieties only: Bulb/Bulblet: shape of stem end (as for 18)

Grouping characteristic: no.

Type of characteristic: **QN** – Quantitative characteristic.

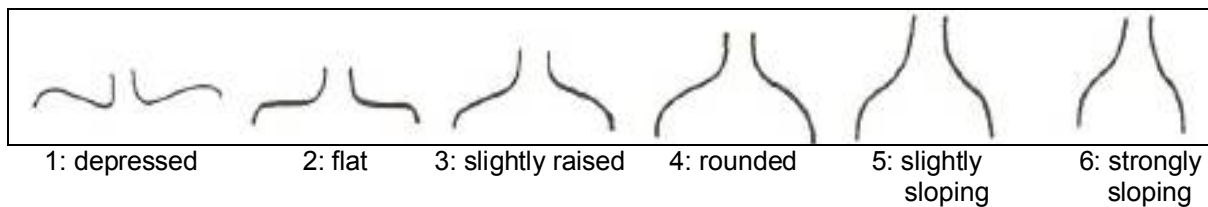
Type of observation: **VG** – Single visual assessment of a group of plants or parts of plants; in practice a single assessment of an average single plant or part of plant.

Stage of observation: After harvest, but before bulb starts sprouting during storage.

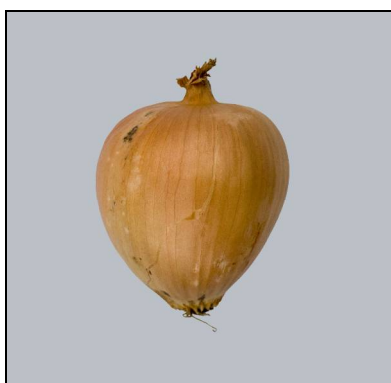
Method of observation: Visual observation, see explanation.

Notes and states of expression:

- 1: depressed
- 2: flat
- 3: slightly raised
- 4: rounded
- 5: slightly sloping
- 6: strongly sloping

CPVO explanation:

19 Onion varieties only: Bulb/Bulblet: shape of stem end (as for 18)



2: flat



3: slightly raised



4: rounded



5: slightly sloping



6: strongly sloping

20 Bulb/Bulblet: shape of root end (as for 18)

Grouping characteristic: no.

Type of characteristic: **QN** – Quantitative characteristic.

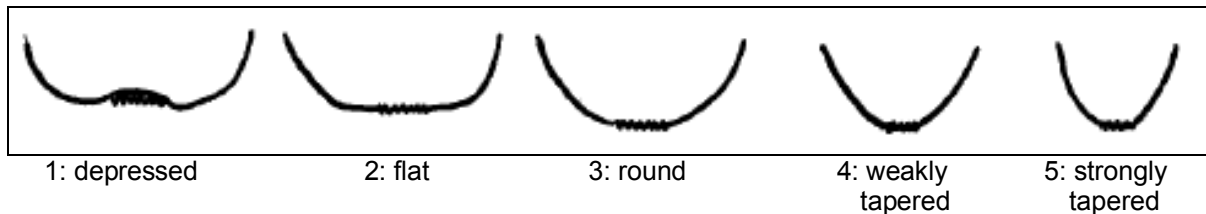
Type of observation: **VG** – Single visual assessment of a group of plants or parts of plants; in practice a single assessment of an average single plant or part of plant.

Stage of observation: After harvest, but before bulb starts sprouting during storage.

Method of observation: Visual observation, see explanation..

Notes and states of expression:

- 1: depressed
- 2: flat
- 3: round
- 4: weakly tapered
- 5: strongly tapered

CPVO explanation:

20 Bulb/Bulblet: shape of root end (as for 18)



1: depressed



2: flat



3: round



4: weakly tapered



5: strongly tapered

21 Bulb/Bulblet: adherence of dry skin after harvest

Grouping characteristic: no.

Type of characteristic: **QN** – Quantitative characteristic.

Type of observation: **VG** – Single visual assessment of a group of plants or parts of plants; in practice a single assessment of an average single plant or part of plant.

Stage of observation: After harvest, but before bulb starts sprouting during storage.

Method of observation: Use example varieties for calibration.

Notes and states of expression:

- 1: very weak
- 2: very weak to weak
- 3: weak
- 4: weak to medium
- 5: medium
- 6: medium to strong
- 7: strong
- 8: strong to very strong
- 9: very strong



3: weak



5: medium



7: strong

22 Bulb/Bulblet: thickness of dry skin

Grouping characteristic: no.

Type of characteristic: QN – Quantitative characteristic.

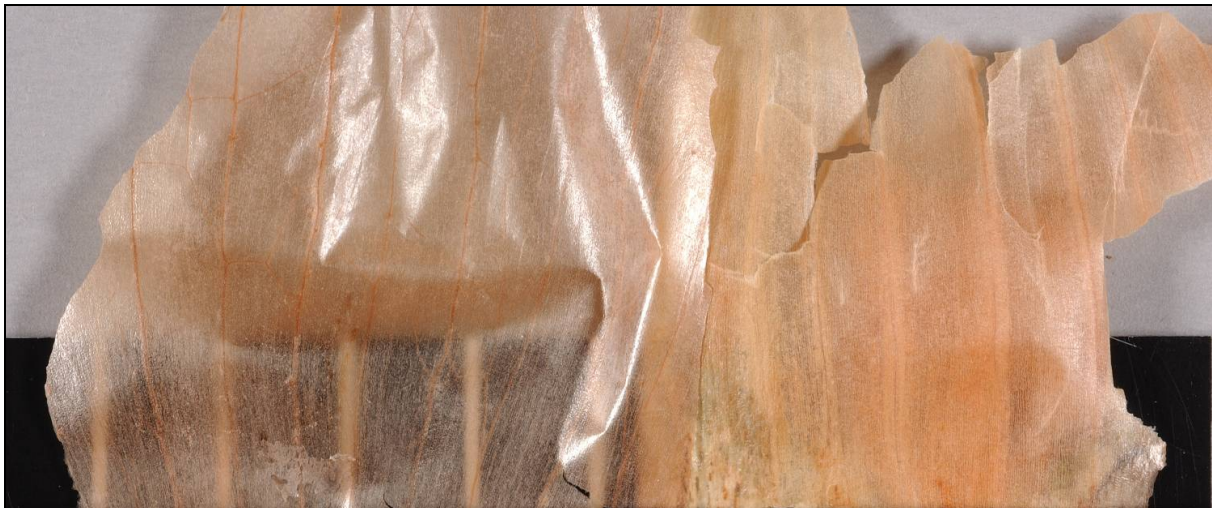
Type of observation: VG – Single visual assessment of a group of plants or parts of plants; in practice a single assessment of an average single plant or part of plant.

Stage of observation: After harvest, but before bulb starts sprouting during storage.

Method of observation: Rub skins between fingertips to feel the thickness. Use example varieties.

Notes and states of expression:

- 1: very thin
- 2: very thin to thin
- 3: thin
- 4: thin to medium
- 5: medium
- 6: medium to thick
- 7: thick
- 8: thick to very thick
- 9: very thick



23 Bulb/Bulblet: base colour of dry skin

Grouping characteristic: yes.

Type of characteristic: PQ – Pseudo-qualitative characteristic.

Type of observation: VG – Single visual assessment of a group of plants or parts of plants; in practice a single assessment of an average single plant or part of plant.

Stage of observation: After harvest, but before bulb starts sprouting during storage.

Method of observation: Use example varieties for calibration.

Notes, states of expression and example varieties:

1: white	La Reine (O), Pompei (O)
2: grey	Griselle (S)
3: green	
4: yellow	Zittauer gelbe (O), Creation (S), Golden Gourmet (S), Topper (S)
5: brown	Valenciana Temprana (O), Delicato (S), Mirage (S), Mikor (S), Pikant (S)
6: pink	Colorada de Figueras (O), Rox (S), Santé (S)
7: red	Brunswijker (O), Red Baron (O)



1: white

4: yellow

5: brown

6: pink

7:red

24 Excluding varieties with white dry skin: Bulb/Bulblet: intensity of base colour of dry skin

Grouping characteristics: no.

Type of characteristic: **QN** – Quantitative characteristic.

Type of observation: **VG** – Single visual assessment of a group of plants or parts of plants; in practice a single assessment of an average single plant or part of plant.

Stage of observation: After harvest, but before bulb starts sprouting during storage.

Method of observation: Use example varieties for calibration.

Notes and states of expression:

- 1: very light
- 2: very light to light
- 3: light
- 4: light to medium
- 5: medium
- 6: medium to dark
- 7: dark
- 8: dark to very dark
- 9: very dark

24 Excluding varieties with white dry skin: Bulb/Bulblet: intensity of base colour of dry skin

Colour: pink



3: light

5: medium

7: dark

Colour: red



1: very light

3: light

5: medium

7: dark

9: very dark

Colour: brown



1: very light

3: light

5: medium

7: dark

9: very dark

These images serve only to illustrate the variation present in the crop and should not be used as an absolute reference.

25 Bulb/Bulblet: hue of colour of dry skin (in addition to base colour)

Grouping characteristic: no.

Type of characteristic: PQ – Pseudo-qualitative characteristic.

Type of observation: VG – Single visual assessment of a group of plants or parts of plants; in practice a single assessment of an average single plant or part of plant.

Stage of observation: After harvest, but before bulb starts sprouting during storage.

Method of observation: Use example varieties for calibration.

Notes, states of expression and example varieties:

1: absent	Pompei (O)
2: greyish	
3: greenish	
4: yellowish	Topper (S)
5: brownish	Santé (S)
6: pinkish	Delicato (S)
7: reddish	Mikor (S), Mirage (S), Pikant (S)
8: purplish	

Explanation:

- 1: absent occurs with all base colours
- 2: greyish occurs with base colour white
- 3: greenish occurs with base colour yellow and brown
- 4: yellowish occurs with base colour brown
- 5: brownish occurs with base colour yellow, pink and red
- 6: pinkish occurs with base colour brown
- 7: reddish occurs with base colour brown
- 8: purplish occurs with base colour red

26 Bulb/Bulblet: coloration of epidermis of fleshy scales

Grouping characteristic: no.

Type of characteristic: PQ – Pseudo-qualitative characteristic.

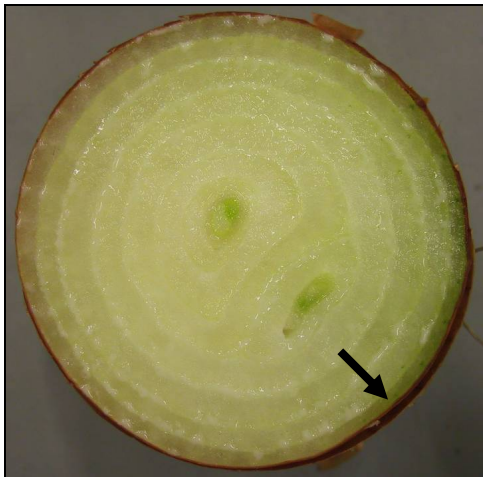
Type of observation: VG – Single visual assessment of a group of plants or parts of plants; in practice a single assessment of an average single plant or part of plant.

Stage of observation: After harvest, but before bulb starts sprouting during storage.

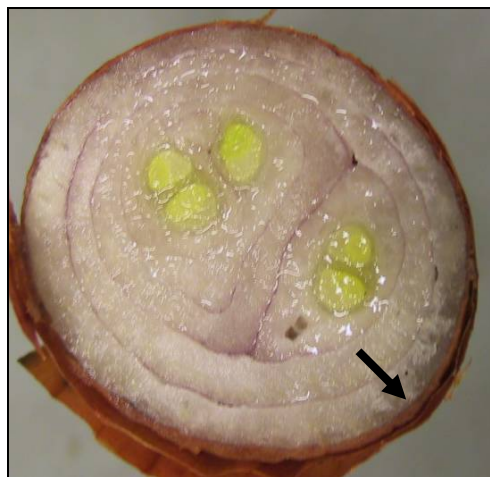
Method of observation: Cut the bulbs, peel a few fleshy scales and observe the epidermis. Use example varieties for calibration.

Notes and states of expression:

- 1: absent
- 2: greenish
- 3: reddish



2: greenish



3: reddish

27 Bulb/Bulblet: number of growing points per kg

Grouping characteristic: yes.

Type of characteristic: QN – Quantitative characteristic.

Type of observation: MS – Calculated average of the measurement of 60 plants (O) or 40 plants vegetative (S) or parts of plants.

Stage of observation: Just before sprouting during storage. For varieties applied as onions to be judged on material directly grown from seed. For varieties applied as shallots to be judged on material directly grown from submitted bulbs or from replanted bulbs harvested from seed-propagated varieties.

Method of observation: Identify each bulb/bulblet, weigh them apart and note weights. Make a cross section of every bulb/bulblet and count the number of growing points. If the growing points are hard to see, plant the lower part of the bulb/bulblet in a pot of soil. Leave for a few weeks (keep moist) until the growing points rise from the bulb/bulblet. Note the number of growing points for every bulb/bulblet. Make a statistical analysis (analysis of variance), for example by means of GenStat. Use example varieties.

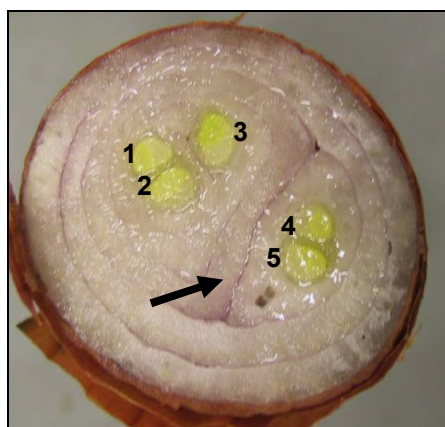
Notes, states of expression and example varieties:

1: very low	Barletta (O), Pompei (O)
2: very low to low	
3: low	Cuisse de Poulet du Poitou (O), Figaro (O), Owa (O)
4: low to medium	
5: medium	Longor (S), Mirage (S), Prisma (S)
6: medium to high	
7: high	Bonilla (S), Creation (S), Mikor (S)
8: high to very high	
9: very high	Griselle (S), Rox (S), Tropix (S)

CPVO explanation:

To be judged on material directly grown from seed for varieties applied as onions. The number of growing points (axes) should be assessed when the bulb/bulblet has completely dried back at the end of storage, just before sprouting commences. Taking median sized bulbs, the bulb or bulblet should be cut in transverse section at $\frac{1}{3}$ of the length from the base. Each axis appears as a point, often greenish in colour surrounded by tissue rings.

For a given variety, the number of growing points per bulb will vary according to the size of the bulb, and the size of the bulb will be influenced by the size of the bulb from which it originated. However, the weight of bulb per growing point is consistent for a given variety, irrespective of the size of the bulb. Thus, the characteristic observes the number of growing points per kg (i.e. the inverse of the weight of bulb per growing point).



28 Bulb/bulblet: dry matter content

Grouping characteristic: no.

Type of characteristic: QN – Quantitative characteristic.

Type of observation: MG – Single measurement of a group of plants or parts of plants; in practice a single measurement of an average single plant or part of plant.

Stage of observation: Directly after harvest.

Method of observation: For determining the dry matter content, see CPVO explanation. Use example varieties.

Notes, states of expression and example varieties:

1: very low	Exhibition (O)
2: very low to low	
3: low	Golden Bear (O), The Kelsae (O)
4: low to medium	
5: medium	Golden Gourmet (S), Topper (S)
6: medium to high	
7: high	Birnförmige (O), Zittauer gelbe (O), Creation (S), Longor (S)
8: high to very high	
9: very high	Griselle

CPVO explanation:

Dry matter content should be determined according to Chapter 3.5 (e.g. one sample of 20 bulbs from each plot). From these bulbs the dry skin should be removed as well as the protruding part of the root disk. From these 20 bulbs a bulk sample should be prepared by cutting the bulbs into small pieces of 1-5 mm size. A representative sample should be weighed directly after cutting (the biodegradation of sugars and carbohydrates starts as soon as cells are damaged). The samples should be dried for 2 hours at 105°C and then the temperature should be lowered to 65°C during 22 hours. Lowering of temperature is necessary to avoid caramelisation. The remaining weight should be assessed after 24 hours. From these figures the dry matter content may be calculated. The dry matter content could also be assessed by refractometer.

29 Onion varieties only: Tendency to bolting in spring sown trials

Grouping characteristic: no.

Type of characteristic: **QN** – Quantitative characteristic.

Type of observation: **VG** – Single visual assessment of a group of plants or parts of plants; in practice a single assessment of an average single plant or part of plant.

Stage of observation: During the period the crop is on the field, and foliage and bulb are developing.

Method of observation: Count the number of bolting plants once a week. Use example varieties.

Notes and states of expression:

- 1: absent or very weak
- 2: very weak to weak
- 3: weak
- 4: weak to medium
- 5: medium
- 6: medium to strong
- 7: strong
- 8: strong to very strong
- 9: very strong

30 Onion varieties only: Time of beginning of bolting in spring sown trials

Grouping characteristic: no.

Type of characteristic: **QN** – Quantitative characteristic.

Type of observation: **MS** – Calculated average of the measurement of 60 plants or parts of plants.

Stage of observation: During the period the crop is on the field, and foliage and bulb are developing.

Method of observation: Note the date of emergence of the first bolting plant. Use example varieties.

Notes and states of expression:

- 1: very early
- 2: very early to early
- 3: early
- 4: early to medium
- 5: medium
- 6: medium to late
- 7: late
- 8: late to very late
- 9: very late

31 Onion varieties only: Tendency to bolting in autumn sown trials

Grouping characteristic: no.

Type of characteristic: **QN** – Quantitative characteristic.

Type of observation: **VG** – Single visual assessment of a group of plants or parts of plants; in practice a single assessment of an average single plant or part of plant.

Stage of observation: During the period the crop is on the field, and foliage and bulb are developing.

Method of observation: Count the number of bolting plants once a week. Use example varieties.

Notes and states of expression:

- 1: absent or very weak
- 2: very weak to weak
- 3: weak
- 4: weak to medium
- 5: medium
- 6: medium to strong
- 7: strong
- 8: strong to very strong
- 9: very strong

32 Onion varieties only: Time of beginning of bolting in autumn sown trials

Grouping characteristic: no.

Type of characteristic: **QN** – Quantitative characteristic.

Type of observation: **MS** – Calculated average of the measurement of 60 plants or parts of plants.

Stage of observation: During the period the crop is on the field, and foliage and bulb are developing.

Method of observation: Note the date of emergence of the first bolting plant. Use example varieties.

Notes and states of expression:

- 1: very early
- 2: very early to early
- 3: early
- 4: early to medium
- 5: medium
- 6: medium to late
- 7: late
- 8: late to very late
- 9: very late

33 Onion varieties only: Time of harvest maturity for autumn sown trials (foliage fall-over in 80% of plants)

Grouping characteristic: no.

Type of characteristic: **QN** – Quantitative characteristic.

Type of observation: **MS** – Calculated average of the measurement of 60 plants or parts of plants.

Stage of observation: From the day the first plants is falling over until at least 80% of the plants has fallen over.

Method of observation: Note the date on which 80% of the plants has fallen over. Relate to example varieties.

Notes and states of expression:

- 1: very early
- 2: very early to early
- 3: early
- 4: early to medium
- 5: medium
- 6: medium to late
- 7: late
- 8: late to very late
- 9: very late

34.1 Onion varieties only: Time of harvest maturity for spring sown trials (as for 33).

Grouping characteristic: no.

Type of characteristic: QN – Quantitative characteristic.

Type of observation: MS – Calculated average of the measurement of 60 plants or parts of plants.

Stage of observation: From the day the first plants is falling over until at least 80% of the plants has fallen over.

Method of observation: Note the date on which 80% of the plants has fallen over. Relate to example varieties.

Notes, states of expression and example varieties:

- 1: very early
- 2: very early to early
- 3: early Buffalo, Golde Bear
- 4: early to medium
- 5: medium Piroska
- 6: medium to late
- 7: late Beacon
- 8: late to very late
- 9: very late



Foliage which has fallen over.

34.2 Shallot varieties only: Time of harvest maturity (as for 33)

Grouping characteristic: no.

Type of characteristic: **QN** – Quantitative characteristic.

Type of observation: **MS** – Calculated average of the measurement of 40 (vegetatively propagated varieties) or 60 (seed propagated varieties) plants or parts of plants.

Stage of observation: From the day the first plants is falling over until at least 80% of the plants has fallen over.

Method of observation: Note the date on which 80% of the plants has fallen over. Relate to example varieties.

Notes, states of expression and example varieties:

1: very early

2: very early to early

3: early Ploumor, Rox

4: early to medium

5: medium Creation, Pikant

6: medium to late

7: late Golden Gourmet, Santé

8: late to very late

9: very late

35 Time of sprouting during storage

Grouping characteristic: no.

Type of characteristic: **QN** – Quantitative characteristic.

Type of observation: **MS** – Calculated average of the measurement of at least 50 plants or parts of plants.

Stage of observation: From the moment the first bulbs start sprouting.

Method of observation: Count the number of sprouting bulbs and the number of non sprouting bulbs. Calculate the percentage of sprouting bulbs related to the total number of bulbs. Relate this score to example varieties.

If none or only a few bulbs were sprouting, the variety has to be put back in storage and the procedure has to be repeated after 4 weeks.

Notes and states of expression:

- 1: very early
- 2: very early to early
- 3: early
- 4: early to medium
- 5: medium
- 6: medium to late
- 7: late
- 8: late to very late
- 9: very late

CPVO explanation:

Care should be taken to exclude damaged bulbs. Storage temperature should be maintained between 2°C and 5°C with good ventilation which can be achieved by storing in stacking, slotted trays.

In climates which have cooler summer temperature, it is advisable to 'cure' bulbs for 2 weeks at a temperature of 30-35°C. Temperatures above 40°C should be avoided to prevent growth of *Aspergillus niger*. A minimum of 50 bulbs are required to assess sprouting. Assessment should be carried out every 2 to 4 weeks.

36 Male sterility

Grouping characteristic: yes.

Type of characteristic: **QN** – Quantitative characteristic.

Type of observation: **VG** – Single visual assessment of a group of plants or parts of plants; in practice a single assessment of an average single plant or part of plant.

Stage of observation: On the flowering plant.

Method of observation: See CPVO explanation.

Notes and states of expression:

1: absent or very weak

2: weak

3: strong

CPVO explanation:

After replanting of harvested bulbs in the second year, flowers will emerge. In dry weather, when flowers are completely open, male sterility should be assessed by checking if pollen is released from the anthers. This characteristic has to be observed plant by plant; the expression represents the percentage of male sterile plants.

State	Note	% male sterility
absent or very weak	1	0-10 %
weak	2	11-80 %
strong	3	81-100 %

Notes

Notes

Notes



nak  tuinbouw