



CALIBRATION

MANUAL

Harmonized with

Naktuinbouw and NCSS(/NARO)

DUS Test for Lettuce

Lactuca sativa L.

CALIBRATION MANUAL

DUS Test for Lettuce

Contents

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1. Purpose

This Calibration Manual was established by collaborative activities between Naktuinbouw (Netherlands) and NCSS (/NARO) (Japan).

The purpose of this Calibration Manual is to harmonize technique of DUS examination in the two countries and use it also internationally.

2. Use of this Calibration Manual

This Calibration Manual indicates only methods of observation for morphological characteristics included in UPOV Test Guidelines.

3. Growth types of varieties



Butterhead lettuce



Crisphead lettuce – Saladin (iceberg)



Cos (Roman) lettuce



Crisphead lettuce - Batavia



“Grasse” or Latin lettuce



Cutting/gathering lettuce - Lollo



Cutting/ Gathering lettuce – Oakleaf



Cutting/ Gathering lettuce – Oakleaf Radichetta-type



Cutting/Gathering lettuce - Batavia-like lettuce



Cutting/Gathering lettuce – Cos-like lettuce



Stem lettuce

In the first place, the collection should be divided according to the following growth types:

Plant: growth type

Examples:

- | | |
|----------------------------------|--|
| 1. Butterhead Lettuce: | Clarion, Merveille des quatre saisons, Verpia |
| 2. Crisphead Lettuce: | Blonde de Paris (Batavia), Calmar, Saladin (Iceberg) |
| 3. Cos Lettuce (Roman Lettuce): | Blonde maraîchère (Roman types) |
| 4. "Grasse" or Latin Lettuce: | Bibb, Sucrine |
| 5. Cutting or Gathering Lettuce: | Frisée d'Amérique, Lollo rossa, Oakleaf, Salad Bow |
| 6. Stem Lettuce: | Celtuce |

Key to Growth Types

Cultivated lettuce varieties (vegetables) can be grouped into the following growth types:

(1) Butterhead Lettuce

Heading or with a tightly filled heart, thin to medium thick tender leaves with a clear midrib; head shape ranging from broad elliptic to transverse elliptic.

(2) Crisphead Lettuce (including the Iceberg, Batavia and Maravilla types)

Weak to very strong heading, rather thin to very thick and tough leaves, no clear midrib but with flabellate venation.

Iceberg types (like Calmar and Saladin) are mainly thick and tough-leaved, predominantly green and greygreen, leaf margin hardly to rather strongly incised.

Batavia types are generally medium thick-leaved and with rather strongly blistered leaves, predominantly yellowish or medium green; under cold conditions not always clearly heading.

Maravilla types have rather thick and tough leaves, only slightly or not blistered.

(3) Cos Lettuce (Roman Lettuce)

Heading or semi-heading, elongated and rather tough leaves with a clear midrib, head shape in longitudinal section elliptic, length of head >1.5 x diameter.

(4) “Grasse” or Latin Lettuce (sometimes included under Cos Lettuce)

Heading or semi-heading, tough thick leaves with clear midrib, head shape short elliptic to slightly obovate. Some types only have a tightly filled heart, others are more similar to a short Cos Lettuce. Suitable for semi-arid conditions.

(5) Cutting or Gathering Lettuce

Rather heterogeneous group ranging from non-heading butterhead-like, non-heading Batavia-like, non-heading crisp types to Oakleaf and Catalogna (lobed) types with deeply dissected leaves (Monet) and types with strongly undulated leaf margin (Lollo). Varieties partly with a clear midrib and partly with flabellate venation of the leaves. Common characteristic: loose-leaved rosette.

(6) Stem Lettuce

Forms a fleshy stem before bolting, at least under (semi-) short day conditions; leaves are mainly tough and have a clear midrib. Leaves and/or stem are consumed.

4. Grouping characteristics:

The following have been agreed as useful grouping characteristics:

- (a) Seed: color (characteristic 1)
- (b) Leaf: anthocyanin coloration (characteristic 20)
- (c) Time of beginning of bolting under long day conditions (characteristic 35)
- (d) Resistance to downy mildew (*Bremia lactucae*): Isolate Bl:16 (characteristic 39.7)

5. Disclaimer

The information contained in this Calibration Manual is for general information purposes only. The information is provided by Naktuinbouw and NCSS(/NARO) and while we endeavor to keep the information up to date and correct, we make no

representations or warranties of any kind, express or implied, about the completeness, accuracy, reliability, suitability or availability with respect to the Calibration Manual or the information contained on the Calibration Manual for any purpose. Any reliance you place on such information is therefore strictly at your own risk.

6. Method of observation (example of characterization)

	English	UPOV Example Varieties	Netherlands Example Varieties	Japan Example Varieties	Note
1. VG Seed: color (*)					
QL	white	Verpia	Verpia	Great Lakes366	1
	yellow	Durango	Durango		2
	black	Kagraner Sommer	Kagraner Sommer		3

Remarks

Observation should be conducted by submitted seeds for this characteristic.



1 white

2 yellow

3 black



White color is including yellowish white



Black color is including brown and grey



However, pelleted seeds should be not accepted for application varieties. In case of similar varieties with pelleted seeds, observations should be done on seeds with coating peeled off.

6. Method of observation (example of characterization)

	English	UPOV Example Varieties	Netherlands Example Varieties	Japan Example Varieties	Note
2. VG (*) (+)	Seedling: anthocyanin coloration				
QL	absent	Verpia	Verpia		1
	present	Pirat	Pirat		9

Remarks

When there are doubts, this characteristic can easily be observed by keeping the seedlings under cold conditions and without water. Within two to three days, all seedlings of the varieties with anthocyanin will show this characteristic.



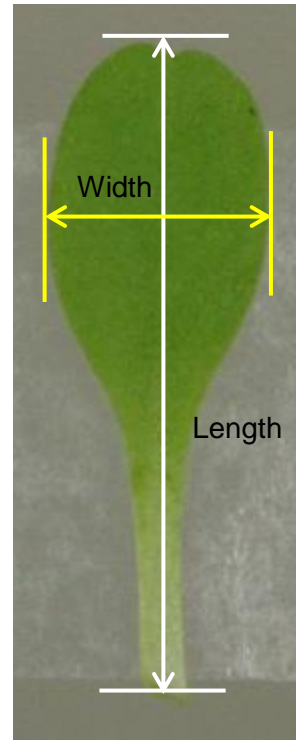
Left: anthocyanin absent (1); right: anthocyanin present (9)

6. Method of observation (example of characterization)

	English	UPOV Example Varieties	Netherlands Example Varieties	Japan Example Varieties	Note
3. VG	Seedling: size of cotyledon (fully developed)				
QN	small	Romance	Romance	Romance	3
	medium	Expresse	Expresse	Great Lakes366	5
	large	Verpia	Verpia	Olympia	7

Remarks

The size could be observed by considering length and width



6. Method of observation (example of characterization)

	English	UPOV Example Varieties	Netherlands Example Varieties	Japan Example Varieties	Note
4. VG	Seedling: shape of cotyledon				
QN	narrow elliptic	Calmar	Calmar	Calmar	3
	medium elliptic	Frisette	Frisette	Great Lakes366	5
	broad elliptic	Fiorella, Sunrise	Fiorella, Sunrise	Black Seeded Simpson	7

Remarks



3 narrow elliptic



5 medium elliptic



7 broad elliptic

6. Method of observation (example of characterization)

	English	UPOV Example Varieties	Netherlands Example Varieties	Japan Example Varieties	Note
5. VG	Leaf: attitude at 10 12 leaf stage				
QN	erect	Baby Star, Romance	Baby Star, Romance	Paris Island Cos	1
	semi-erect	Great Lakes 118, Soraya	Great Lakes 118, Soraya	Great Lakes118	3
	prostrate	Unicum, Vanguard 75	Unicum, Vanguard 75	Vanguard75	5

Remarks

Erect can be characterized as a leaf attitude with an angle between 60 and 90 degrees. Semi-erect can be characterized as a leaf attitude with an angle between 30-60 degrees. Prostrate can be characterized as a leaf attitude with an angle below 30 degrees.



1 erect



3 semi-erect

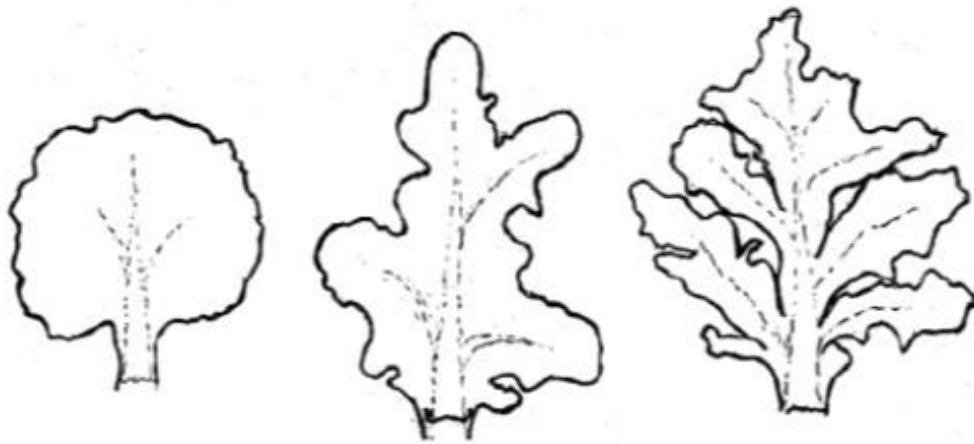
5 prostrate



6. Method of observation (example of characterization)

	English	UPOV Example Varieties	Netherlands Example Varieties	Japan Example Varieties	Note
6. VG	Leaf blade:				
(+)	division				
	(as for 5)				
PQ	entire	Fiorella, Sunrise	Fiorella, Sunrise	White Boston	1
	lobed	A couper à feuille de chêne blonde à graine noire, Salad Bowl	A couper à feuille de chêne blonde à graine noire, Salad Bowl		2
	divided	Lagon, Monet	Lagon, Monet		3

Remarks



1 entire

2 lobed

3 divide



6. Method of observation (example of characterization)

	English	UPOV Example Varieties	Netherlands Example Varieties	Japan Example Varieties	Note
7. VG Plant: diameter (*)					
QN (a)	very small	Pavane, Tom Thumb	Pavane, Tom Thumb		1
	small	Bastion, Gotte à graine blanche	Bastion, Gotte à graine blanche		3
	medium	Clarion, Verpia	Clarion, Verpia		5
	large	Great Lakes 659, Musette	Great Lakes 659, Musette	Great Lakes659	7
	very large	El Toro, Yuma	El Toro, Yuma		9

Remarks

VG method: Visual observation of the size of the plant. These photographs only give an indication of plant diameter at a planting distance of 40 cm by 27 cm.



1 very small



3 small



5 medium

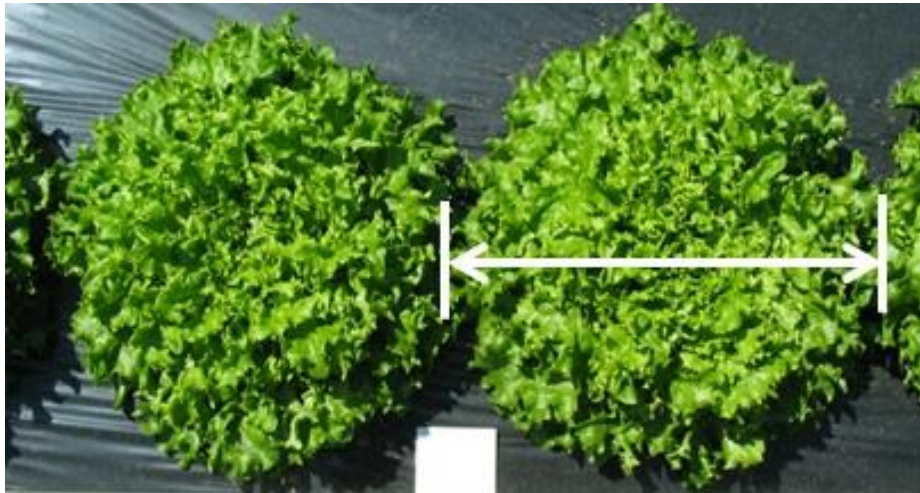


7 large



9 very large

MS method: When there are not enough example varieties in the trial, observations can be conducted by measurement (see following photographs)



6. Method of observation (example of characterization)

	English	UPOV Example Varieties	Netherlands Example Varieties	Japan Example Varieties	Note
8. VG (*)	Plant: head formation				
PQ (a)	no head	Blonde à couper améliorée, Lollo rossa	Blonde à couper améliorée, Lollo rossa	Prize Head	1
	open head	Manfred, Monet	Manfred, Monet	Paris Island Cos	2
	closed head (overlapping)	Kelvin, Sunrise	Kelvin, Sunrise	Great Lakes366	3

Remarks



1 no head



2 open head



3 closed head (overlapping)

6. Method of observation (example of characterization)

	English	UPOV Example Varieties	Netherlands Example Varieties	Japan Example Varieties	Note
9. VG	<u>Varieties with closed head formation only:</u> Head: degree of overlapping of upper part of leaves				
QN (a)	very weak	Colorado	Colorado	White Boston	1
	weak	Danilla, Novita	Danilla, Novita	Paris Island Cos	3
	medium	Augusta, Fiorella	Augusta, Fiorella		5
	strong	Master, Minas	Master, Minas	Olympia	7
	very strong	Kelvin, Roxette	Kelvin, Roxette		9

Remarks



1 very weak



3 weak



5 medium



7 strong



9 very strong



6. Method of observation (example of characterization)

	English	UPOV Example Varieties	Netherlands Example Varieties	Japan Example Varieties	Note
10. VG Head: density					
QN (a)	very loose	Ninja	Ninja	Paris Island Cos	1
	loose	Danilla, Nanda	Danilla, Nanda		3
	medium	Blonde maraîchère	Blonde maraîchère		5
	dense	Hilde II, Kelvin	Hilde II, Kelvin		7
	very dense	Musette, Toronto	Musette, Toronto		9

Remarks

Press with your hand on the head and observe the degree of resistance. Be sure that the head is in harvest stage (before this stage the head is looser). When the head is in slightly overripe stage the observation can also be made, but make sure that the observation takes place before the internal bolting stem is causing resistance.

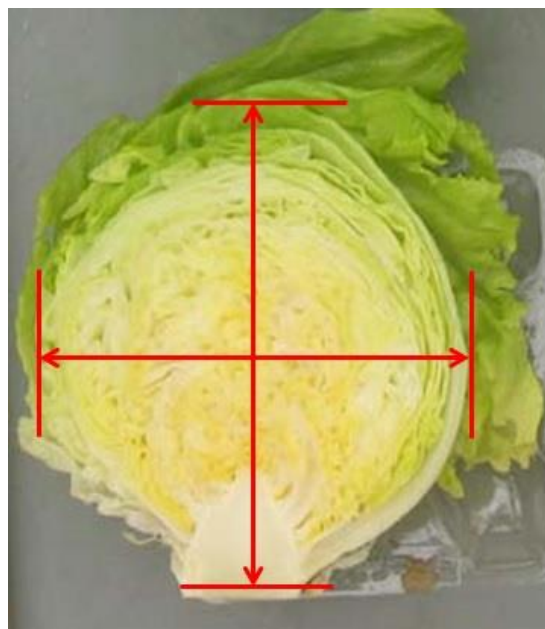
6. Method of observation (example of characterization)

	English	UPOV Example Varieties	Netherlands Example Varieties	Japan Example Varieties	Note
11. VG Head: size					
QN (a)	very small	Tom Thumb	Tom Thumb		1
	small	Bastion, Gotte à graine blanche	Bastion, Gotte à graine blanche		3
	medium	Fiorella, Soraya	Fiorella, Soraya	Great Lakes366	5
	large	Great Lakes 659, Musette	Great Lakes 659, Musette		7
	very large	Blonde maraîchère, El Toro	Blonde maraîchère, El Toro		9

Remarks

VG method: This characteristic involves the actual size of the head, not in relation to the plant diameter.

MS method: When there are not enough example varieties in the trial, observations can be conducted by measurement (see following photographs)



6. Method of observation (example of characterization)

	English	UPOV Example Varieties	Netherlands Example Varieties	Japan Example Varieties	Note
12. VG	<u>Butterhead type varieties in glasshouse only: Head: closing of base</u>				
QN (a)	weak	Passe Partout	Passe Partout		3
	medium	Carmelita	Carmelita		5
	strong	Dustin, Manfred	Dustin, Manfred		7

Remarks

Cut the head and observe the closing of the base

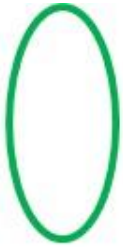


6. Method of observation (example of characterization)

	English	UPOV Example Varieties	Netherlands Example Varieties	Japan Example Varieties	Note
13. VG (*) (+)	Head: shape in longitudinal section				
PQ (a)	narrow elliptic	Verte maraîchère	Verte maraîchère	Paris Island Cos	1
	broad elliptic	Amadeus, Sucrine	Amadeus, Sucrine		2
	circular	Passe Partout, Verpia	Passe Partout, Verpia	Calmar	3

Remarks

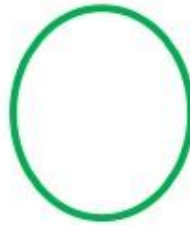
Visual observation by cutting the head longitudinally in two equal halves.



1 narrow elliptic



2 broad elliptic



3 Circular



6. Method of observation (example of characterization)

	English	UPOV Example Varieties	Netherlands Example Varieties	Japan Example Varieties	Note
14. VG Leaf: thickness					
QN (a)	thin	Raisa, Royal Red	Raisa, Royal Red		3
	medium	Dustin, Sunrise	Dustin, Sunrise		5
	thick	Frisée de Beauregard	Frisée de Beauregard		7

Remarks

VG method: Observation should be made on the largest outer leaf, estimating by rubbing between the fingers.

MS method: When there are not enough example varieties in the trial, observations can be conducted by measurement

6. Method of observation (example of characterization)

	English	UPOV Example Varieties	Netherlands Example Varieties	Japan Example Varieties	Note
15. VG	Leaf: attitude at harvest maturity (outer leaves from head lettuce or adult leaves from cutting and stem lettuce)				
QN (a)	erect	Feria, Riva	Feria, Riva		1
	semi-erect	Amelia, Toronto	Amelia, Toronto		3
	horizontal	Chambery, Divina	Chambery, Divina		5

Remarks

Erect can be characterized as a leaf attitude with an angle between 60 and 90 degrees. Semi-erect can be characterized as a leaf attitude with an angle between 30-60 degrees. Prostrate can be characterized as a leaf attitude with an angle below 30 degrees.



1 erect



2 semi-erect

3 horizontal





2 erect



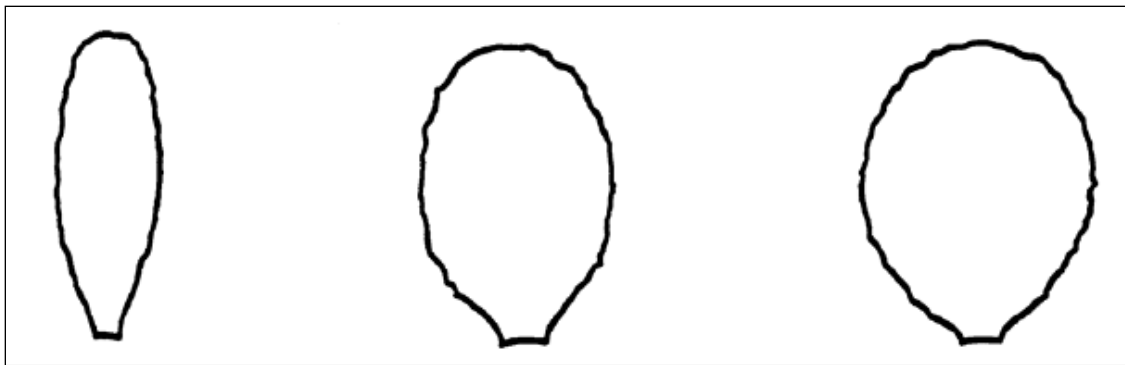
3 semi-erect



6. Method of observation (example of characterization)

	English	UPOV Example Varieties	Netherlands Example Varieties	Japan Example Varieties	Note
16. VG	Leaf: shape				
(*)					
(+)					
QN (a)	narrow elliptic	Riva, Verte maraîchère	Riva, Verte maraîchère	Akakakichisya	1
	medium elliptic	Angela, Xanadu	Angela, Xanadu	Paris Island Cos	2
	broad elliptic	Amadeus, Amelia	Amadeus, Amelia		3
	circular	Elsa, Sunrise, Verpia	Elsa, Sunrise, Verpia	White Boston	4
	transverse broad elliptic	Commodore, Fiorella	Commodore, Fiorella	Great Lakes366	5
	transverse narrow elliptic	Elvira, Madison	Elvira, Madison		6
	obovate	Raisa, Toronto	Raisa, Toronto	Salad Bowl	7
	broad obtrullate	Delicato, Monet	Delicato, Monet		8
	triangular	Deer Tongue	Deer Tongue		9

Remarks



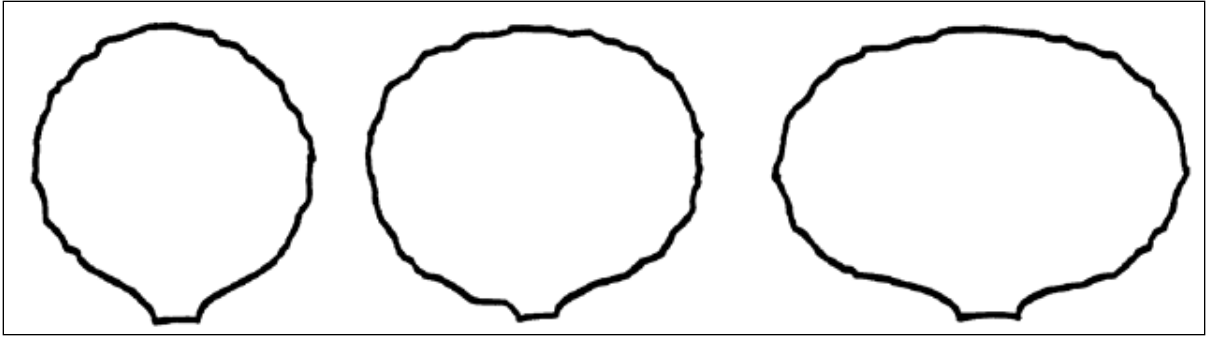
1 narrow elliptic



2 medium elliptic



3 broad elliptic



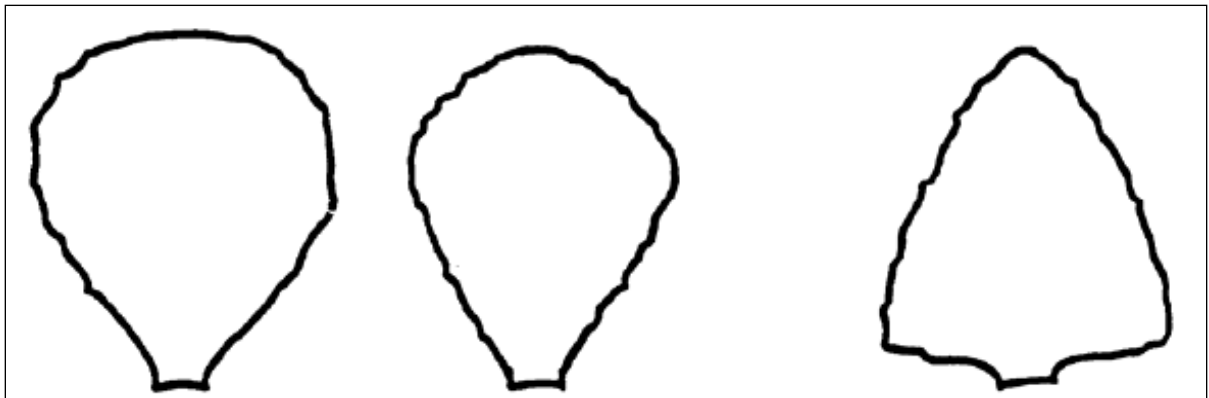
4 circular



5 transverse broad elliptic



6 transverse narrow elliptic



7 obovate



9 triangular

6. Method of observation (example of characterization)

	English	UPOV Example Varieties	Netherlands Example Varieties	Japan Example Varieties	Note
17. VG	Leaf: shape of tip				
PQ (a)	acute	Celtuce, Deer Tongue, Karola, Tempra	Celtuce, Deer Tongue, Karola, Tempra		1
	obtuse	Chicon des Charentes, Grise maraîchère	Chicon des Charentes, Grise maraîchère	Akakakichisya	2
	rounded	Blonde Maraîchère, Maserati	Blonde Maraîchère, Maserati		3

Remarks



1 acute



2 obtuse



3 rounded

6. Method of observation (example of characterization)

	English	UPOV Example Varieties	Netherlands Example Varieties	Japan Example Varieties	Note
18. VG (*) (+)	Leaf: hue of green color of outer leaves				
PQ (a)	absent	Donatello, Verpia	Donatello, Verpia	Olympia	1
	yellowish	Dorée de printemps	Dorée de printemps	Black Seeded Simpson	2
	greyish	Celtuce, Du bon jardinier	Celtuce, Du bon jardinier	White Boston	3
	reddish	Lollo rossa, Revolution, Rosa (see also Ad. 18)	Lollo rossa, Revolution, Rosa (see also Ad. 18)	Akakakichisya	4

Remarks



1 absent



2 yellowish



3 greyish



4 reddish

Ad 18 and 19 Leaf: hue of green color of outer leaves

Intensity of color (Ch. 19)	Hue of green color (Ch. 18)			
	1 absent	2 yellowish	3 greyish	4 reddish
1 very light	Krizet	Marbello Black Seeded Simpson	Hohlblättriger Butter	
3 light	Blonde maraîchère, Mondial, Reskia	Blondine (= Viktoria), Locarno, Pia	Celtuce, Kinemontepas, Natina	Brauner Trotzkopf, Maravilla de Verano
5 medium	Florian, Frillblond, Sunrise, Têtue de Nîmes	Australische Gele, Dorée de printemps, Gotte jaune d'or	Clarion, Du bon jardinier, Durango, Kelvin	Lollo rossa, Pirat, Prizehead (= Frisée d'Amérique)
7 dark	Baby Star, Donatello, Verpia, Waldemann Dark Green	Batavia, Chicon	Chou de Naples (= Webb's Wonderful), Galaxy, Toledo	Merveille des quatre saisons, Rosa, Rouge d'Hiver
9 very dark	Pavane		(Sudia)	Liberty, Malibu, Pentared, Revolution

6. Method of observation (example of characterization)

	English	UPOV Example Varieties	Netherlands Example Varieties	Japan Example Varieties	Note
19. VG	Leaf: intensity of color of outer leaves				
(*)					
(+)					
QN (a)	very light				1
	light				3
	medium				5
	dark				7
	very dark				9

Remarks

6. Method of observation (example of characterization)

	English	UPOV Example Varieties	Netherlands Example Varieties	Japan Example Varieties	Note
20. VG (*)	Leaf: anthocyanin coloration				
QL (a)	absent	Fiorella, Sunrise	Fiorella, Sunrise	Great Lakes366	1
	present	Commodore, Pirat	Commodore, Pirat		9

Remarks



1 absent



9 present

6. Method of observation (example of characterization)

	English	UPOV Example Varieties	Netherlands Example Varieties	Japan Example Varieties	Note
21. VG (*)	Leaf: intensity of anthocyanin coloration				
QN (a)	very weak	Chicon de Charentes, Muranta, Rumina	Chicon de Charentes, Muranta, Rumina		1
	weak	Du bon jardinier	Du bon jardinier	Big Boston	3
	medium	Trocadéro à graine noire	Trocadéro à graine noire	Prize Head	5
	strong	Amandine, Merveille des quatre saisons	Amandine, Merveille des quatre saisons		7
	very strong	Little Leprechaun, Revolution	Little Leprechaun, Revolution		9

Remarks



1 very weak



3 weak



5 medium



7 strong



9 very strong

6. Method of observation (example of characterization)

	English	UPOV Example Varieties	Netherlands Example Varieties	Japan Example Varieties	Note
22. VG	Leaf: distribution of anthocyanin				
QL (a)	localized	Muranta, Rumina	Muranta, Rumina	Nishina Beni	1
	entire	Delicato, Liberty	Delicato, Liberty		2

Remarks

Varieties with anthocyanin distribution “entire”: The sight of the plant on the field must be completely anthocyanised. However, the leaves may have a certain wide green region on the basal part which is visible when splitting them off.



1 localized



2 entire

6. Method of observation (example of characterization)

	English	UPOV Example Varieties	Netherlands Example Varieties	Japan Example Varieties	Note
23. VG	Leaf: kind of anthocyanin distribution				
QL (a)	diffused only	Amandine, Pirat, Sanguine	Amandine, Pirat, Sanguine		1
	in spots only	Passion blonde à graine blanche, Unicum	Passion blonde à graine blanche, Unicum		2
	diffused and in spots	Lovina, Rougette du Midi	Lovina, Rougette du Midi		3

Remarks



3 diffused only

2 in spots

1 diffused and in spots

6. Method of observation (example of characterization)

	English	UPOV Example Varieties	Netherlands Example Varieties	Japan Example Varieties	Note
24. VG	Leaf: glossiness of upper side				
QN (a)	absent or very weak	Divina, Du bon jardinier	Divina, Du bon jardinier		1
	weak	Elsa, Fiorella	Elsa, Fiorella	Okayama Saladana	3
	medium	Feria, Sunrise	Feria, Sunrise	Great Lakes366	5
	strong	Ibis, Noisette	Ibis, Noisette	Nishina Beni	7

Remarks

6. Method of observation (example of characterization)

	English	UPOV Example Varieties	Netherlands Example Varieties	Japan Example Varieties	Note
25. VG	Leaf: blistering				
(*)					
QN (a)	absent or very weak	Donia, Frillblond	Donia, Frillblond	Cisco	1
	weak	Fiorella, Minas	Fiorella, Minas	Great Lakes366 Olympia	3
	medium	Commodore	Commodore	Early Impulse	5
	strong	Blonde de Paris, Smile	Blonde de Paris, Smile	Nishina Beni	7
	very strong	Blonde de Doulon	Blonde de Doulon	Black Seeded Simpson	9

Remarks



1 absent or very weak



3 weak



5 medium



7 strong



9 very strong

6. Method of observation (example of characterization)

	English	UPOV Example Varieties	Netherlands Example Varieties	Japan Example Varieties	Note
26. VG	Leaf: size of blisters				
QN (a)	small	Dorée de printemps	Dorée de printemps	Black Seeded Simpson Paris Island Cos	3
	medium	Dustin, Sunrise	Dustin, Sunrise	Early Impulse	5
	large	Fiorella, Massilia	Fiorella, Massilia	Okayama Saladana White Boston	7
Remarks					



3
small






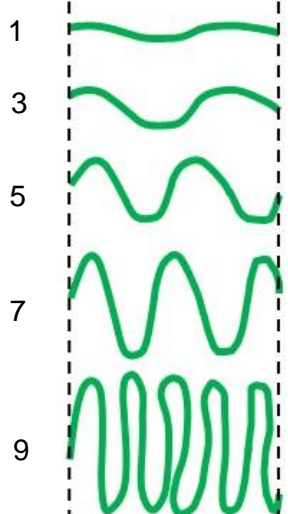
5
medium

7
large

6. Method of observation (example of characterization)

	English	UPOV Example Varieties	Netherlands Example Varieties	Japan Example Varieties	Note
27. VG (*)	Leaf blade: degree of undulation of margin				
QN (a)	absent or very weak	Dustin, Manfred	Dustin, Manfred		1
	weak	Commodore, Sunrise	Commodore, Sunrise	Paris Island Cos	3
	medium	Noisette, Pentared	Noisette, Pentared	Mikado Great3204	5
	strong	Calmar, Invicta	Calmar, Invicta	Grand Rapids	7
	very strong	Lollo rossa, Madison	Lollo rossa, Madison		9

Remarks

		
1	3	5
absent or very weak	weak	medium
		
7	9	
strong	very strong	

6. Method of observation (example of characterization)

	English	UPOV Example Varieties	Netherlands Example Varieties	Japan Example Varieties	Note
28. VG	Leaf blade: incisions of margin on apical part				
QL (a)	absent	Verpia	Verpia		1
	present	Calmar, Gloire du Dauphiné, Unicum	Calmar, Gloire du Dauphiné, Unicum		9

Remarks

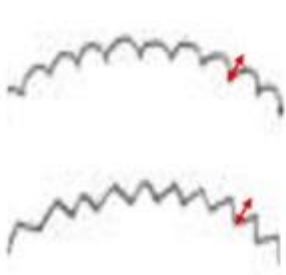
	
1	9
absent	present

6. Method of observation (example of characterization)

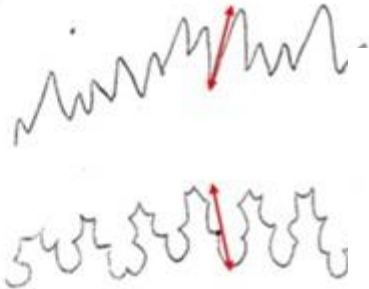
	English	UPOV Example Varieties	Netherlands Example Varieties	Japan Example Varieties	Note
29. VG (*)	Leaf blade: depth of incisions on margin on apical part				
QN (a)	shallow	Pentared, Unicum	Pentared, Unicum	Great Lakes366	3
	medium	Ithaca Great Lakes	Ithaca Great Lakes	Ithaca Olympia	5
	deep	Lagon, Monet	Lagon, Monet	Salad Bawl	7

Remarks

3	shallow	
5	medium	
7	deep	



3 shallow



5 medium



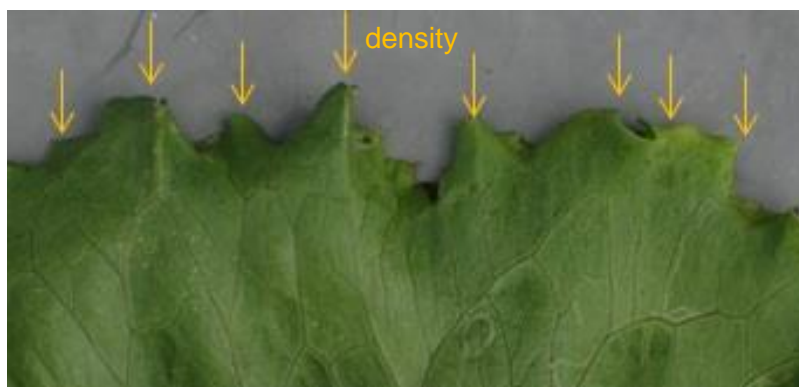
7 deep

6. Method of observation (example of characterization)

	English	UPOV Example Varieties	Netherlands Example Varieties	Japan Example Varieties	Note
30. VG	Leaf blade: density of incisions on margin on apical part				
QN (a)	sparse	Maravilla de Verano	Maravilla de Verano	Great Lakes366	3
	medium	Calmar, De Pierre Benite	Calmar, De Pierre Benite	Calmar MR	5
	dense	Grand Rapids, Ithaca Great Lakes	Grand Rapids, Ithaca Great Lakes	Olympia	7
	very dense	Locarno, Madison	Locarno, Madison		9

Remarks

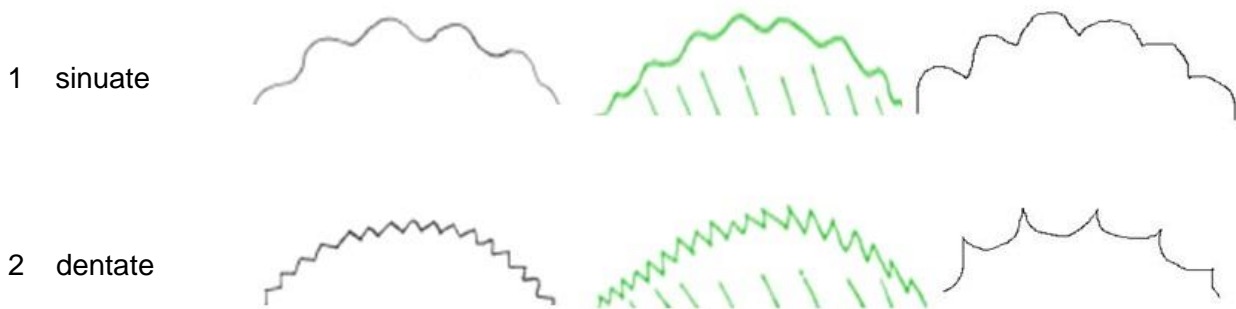
This characteristic involves the incision of the margin at the top, not the incision of the whole leaf. Therefore it does not concern the lobing or division of the leaf. Sometimes the depth of incision of the leaf margin at the top varies. In that case, all incisions (both deep and shallow) should be taken into account.



6. Method of observation (example of characterization)

	English	UPOV Example Varieties	Netherlands Example Varieties	Japan Example Varieties	Note
31. VG	<u>Varieties with shallow incisions on margin on apical part only: Leaf blade: type of incisions on apical part</u>				
QL (a)	sinuate	Gloire du Dauphiné	Gloire du Dauphiné	White Boston	1
	dentate	Calmar	Calmar	Calmar	2

Remarks



6. Method of observation (example of characterization)

	English	UPOV Example Varieties	Netherlands Example Varieties	Japan Example Varieties	Note
32. VG	Leaf blade: venation				
QL (a)	not flabellate	Donatella, Verpia, Xanadu	Donatella, Verpia, Xanadu		1
	flabellate	Gloire du Dauphiné, Locarno, Monet	Gloire du Dauphiné, Locarno, Monet		2

Remarks



2 not flabellate



1 flabellate

6. Method of observation (example of characterization)

	English	UPOV Example Varieties	Netherlands Example Varieties	Japan Example Varieties	Note
33. VG	Axillary sprouting				
QN	absent or very weak	Valmaine	Valmaine		1
	weak	Aprilia, Sunrise	Aprilia, Sunrise		3
	medium				5
	strong	Riva	Riva		7
	very strong	Doncella	Doncella		9

Remarks

Stage of observation is harvested stage or over-ripe stage



6. Method of observation (example of characterization)

	English	UPOV Example Varieties	Netherlands Example Varieties	Japan Example Varieties	Note
34. MG	Time of harvest maturity				
QN (a)	very early	Blonde à couper améliorée	Blonde à couper améliorée		1
	early	Attraction	Attraction	White Boston	3
	medium	Newton	Newton	Olympia	5
	late	Calmar	Calmar	Vanguard Calmar	7
	very late	El Toro	El Toro		9

Remarks

6. Method of observation (example of characterization)

	English	UPOV Example Varieties	Netherlands Example Varieties	Japan Example Varieties	Note
35. MG (*)	Time of beginning of bolting under long day conditions				
QN	very early	Blonde à couper améliorée	Blonde à couper améliorée	Green Leaf	1
	early	Gotte à graine blanche	Gotte à graine blanche	Prize Head	3
	medium	Carelia	Carelia	Great Lakes366	5
	late	Hilde II	Hilde II	Olympia	7
	very late	Erika, Kinemontepas, Rex	Erika, Kinemontepas, Rex		9

Remarks

Observation on all individual plants of a sample, preferably three times a week in same trial or separate trial with example varieties. Record the date when a plant is starting to bolt. Compare with the set of example varieties, to give the final note.

6. Method of observation (example of characterization)

	English	UPOV Example Varieties	Netherlands Example Varieties	Japan Example Varieties	Note
36. VG/ MG	Plant: height (flowering plant)				
QN	short	Gotte à graine blanche	Gotte à graine blanche		3
	medium	Samourai	Samourai		5
	tall	Danilla, Hilde II	Danilla, Hilde II		7

Remarks



6. Method of observation (example of characterization)

	English	UPOV Example Varieties	Netherlands Example Varieties	Japan Example Varieties	Note
37. VG	Plant: fasciation (at flowering stage)				
QL	absent	Calmar, Romance	Calmar, Romance		1
	present	Gotte jaune d'or	Gotte jaune d'or		9

Remarks



1 absent



9 present

6. Method of observation (example of characterization)

	English	UPOV Example Varieties	Netherlands Example Varieties	Japan Example Varieties	Note
38. VG	Plant: intensity of fasciation (flowering plant)				
QN	very weak	Gotte à graine blanche	Gotte à graine blanche		1
	weak	Verte maraîchère	Verte maraîchère		3
	medium	Amadeus	Amadeus		5
	strong	Gotte jaune d'or	Gotte jaune d'or		7
	very strong	Chicon des Charentes	Chicon des Charentes		9

Remarks



1 very weak



3 weak



5 medium



7 strong



9 very strong



9 very strong

6. Method of observation (example of characterization)

Characteristic 39-42 are physiological characteristics.

See explanation of UPOV test guideline.

	English	UPOV Example Varieties	Netherlands Example Varieties	Japan Example Varieties	Note
39. VG	Resistance to downy mildew				
(+)	(<i>Bremia lactucae</i>)				
39.1	Isolate BI: 2				
QL	(b) absent	Green Towers			1
	(c) present	Ninja			9
39.2	Isolate BI: 5				
QL	(b) absent	Green Towers			1
	(c) present	Sabine			9
39.3	Isolate BI: 7				
QL	(b) absent	Green Towers			1
	(c) present	Valmaine			9
39.4	Isolate BI: 12				
QL	(b) absent	Green Towers			1
	(c) present	Dandie, UCDM2			9
39.5	Isolate BI: 14				
QL	absent	Green Towers			1
	present	Colorado, Ninja			9
39.6	Isolate BI: 15				
QL	(b) absent	Green Towers			1
	(c) present	Colorado, Sabine			9

6. Method of observation (example of characterization)

	English	UPOV Example Varieties	Netherlands Example Varieties	Japan Example Varieties	Note
39.7 (*)	Isolate BI: 16				
QL (b) (c)	absent	Green Towers			1
	present	Argelès, Ninja			9
39.8	Isolate BI: 17				
QL (b) (c)	absent	Green Towers			1
	present	Argelès, Ninja			9
39.9	Isolate BI: 18				
QL (b) (c)	absent	Green Towers			1
	present	Argelès, Ninja			9
39.10	Isolate BI: 20				
QL (b) (c)	absent	Green Towers			1
	present	Argelès, Ninja			9
39.11	Isolate BI: 21				
QL (b) (c)	absent	Green Towers			1
	present	Argelès, Colorado			9
39.12	Isolate BI: 22				
QL (b) (c)	absent	Green Towers			1
	present	Discovery, Ninja			9

6. Method of observation (example of characterization)

	English	UPOV Example Varieties	Netherlands Example Varieties	Japan Example Varieties	Note
39.13	Isolate BI: 23				
QL	(b) absent	Green Towers			1
	(c) present	Colorado, Discovery, Ninja			9
39.14	Isolate BI: 24				
QL	(b) absent	Argelès, Colorado			1
	(c) present	Dandie, NunDm15, UC DM14			9
39.15	Isolate BI: 25				
QL	(b) absent	Colorado, Discovery			1
	(c) present	Argelès, Ninja			9
39.16	Isolate BI: 26				
QL	(b) absent	Colorado, Discovery			1
	(c) present	Balesta, Bedford			9
39.17	Isolate BI: 27				
QL	(b) absent	Balesta, Colorado			1
	(c) present	Bedford, Discovery			9

6. Method of observation (example of characterization)

	English	UPOV Example Varieties	Netherlands Example Varieties	Japan Example Varieties	Note
40.	VG	Resistance to lettuce mosaic virus (LMV)			
(+)					
QL	(b)	Strain Ls 1			
	(c)				
	absent	Hilde II, Salvina		1	
	present	Corsica		9	
41.	VG	Resistance to <i>Nasonovia ribisnigri</i> biotype Nr: 0			
(+)					
	absent	Green Towers, Abel, Nadine		1	
	present	Silvinas, Barcelona, Dynamite		9	
42.	VG	Resistance to <i>Fusarium oxysporum</i> f. sp. <i>lactucae</i>			
(+)					
		Race 1			
QL	susceptible	Cobham Green, Patriot Salinas		1	
	resistant	Costa Rica No.4, Romasol		9	