CPVO · OCVV
Community Plant Variety Office
Office Communautaire des Variétés Végétales

PROTOCOL FOR DISTINCTNESS, UNIFORMITY AND STABILITY TESTS

Brassica oleracea L. var. *capitata* L.

CABBAGE

UPOV Code: BRASS_OLE_GC

Adopted on 16/02/2011

Entered into force on 01/01/2011

I SUBJECT OF THE PROTOCOL

The protocol describes the technical procedures to be followed in order to meet the Council Regulation 2100/94 on Community Plant Variety Rights. The technical procedures have been agreed by the Administrative Council and are based on general UPOV Document TG/1/3 and UPOV Guideline TG/48/7 dated 31/03/2004 for the conduct of tests for Distinctness, Uniformity and Stability. This protocol applies to varieties of ***Brassica oleracea* L. var. *capitata* L.,** including *Brassica oleracea* L. convar. *capitata* (L.) Alef. var. *alba* DC [white cabbage], *Brassica oleracea* L. convar. *capitata* (L.) Alef. var. *rubra* DC [red cabbage] and *Brassica oleracea* L. convar. *capitata* (L.) Alef. var. *sabauda* DC [savoy cabbage].

II SUBMISSION OF SEED AND OTHER PLANT MATERIAL

1. The Community Plant Variety Office (CPVO) is responsible for informing the applicant of

- the closing date for the receipt of plant material;
- the minimum amount and quality of plant material required;
- the examination office to which material is to be sent.

A sub-sample of the material submitted for test will be held in the variety collection as the definitive sample of the candidate variety.

The applicant is responsible for ensuring compliance with any customs and plant health requirements.

2. Final dates for receipt of documentation and material by the Examination Office

The final dates for receipt of requests, technical questionnaires and the final date or submission period for plant material will be decided by the CPVO and each Examination Office chosen.

The Examination Office is responsible for immediately acknowledging the receipt of requests for testing, and technical questionnaires. Immediately after the closing date for the receipt of plant material the Examination Office should inform the CPVO whether acceptable plant material has been received or not. However if unsatisfactory plant material is submitted the CPVO should be informed as soon as possible.

3. Plant material requirements

The final dates for request for technical examination and sending of Technical Questionnaire as well as submission date of plant material by the applicant, and quantity of plant material to be supplied by the applicant are published on the CPVO website (www.cpvo.europa.eu)and in the S2 official gazette.

Quality of seed: ..... Should not be less than the standards laid down for certified seed in Annex II of Council Directive 2002/55/EC.

Seed Treatment:..... The plant material must not have undergone any treatment unless the CPVO and the Examination Office allow or request such treatment. If it has been treated, full details of the treatment must be given.

Special requirements: ..... -

Labelling of sample: ..... - Species
- File number of the application allocated by the CPVO
- Breeder's reference
- Examination reference (if known)
- Name of applicant
- The phrase “On request of the CPVO”
- In the case of a split sample, the quantity of seed being submitted.

III CONDUCT OF TESTS

1. Variety collection

A variety collection will be maintained for the purpose of establishing distinctness of the candidate varieties in test. A variety collection may contain both living material and descriptive information. A variety will be included in a variety collection only if plant material is available to make a technical examination.

Pursuant to Article 7 of Council Regulation (EC) No. 2100/94, the basis for a collection should be the following:

- varieties listed or protected at the EU level or at least in one of the EEA Member States;
- varieties protected in other UPOV Member States;
- any other variety in common knowledge.

The composition of the variety collection in each Examination Office depends on the environmental conditions in which the Examination Office is located.

Variety collections will be held under conditions which ensure the long term maintenance of each accession. It is the responsibility of Examination Offices to replace reference material which has deteriorated or become depleted. Replacement material can only be introduced if appropriate tests confirm conformity with the existing reference material. If any difficulties arise for the replacement of reference material Examination Offices must inform the CPVO. If authentic plant material of a variety cannot be supplied to an Examination Office the variety will be removed from the variety collection.

2. Material to be examined

Candidate varieties will be directly compared with other candidates for Community plant variety rights tested at the same Examination Office, and with appropriate varieties in the variety collection. When necessary an Examination Office may also include other candidates and varieties. Examination Offices should therefore make efforts to co-ordinate the work with other Offices involved in DUS testing of cabbage. There should be at least an exchange of technical questionnaires for each candidate variety, and during the test period, Examination Offices should notify each other and the CPVO of candidate varieties which are likely to present problems in establishing distinctness. In order to solve particular problems Examination Offices may exchange plant material.

3. Characteristics to be used

The characteristics to be used in DUS tests and preparation of descriptions shall be those referred to in the Annex 1. All the characteristics shall be used, providing that observation of a characteristic is not rendered impossible by the expression of any other characteristic, or the expression of a characteristic is prevented by the environmental conditions under which the test is conducted. In the latter case, the CPVO should be informed. In addition the existence of some other regulation e.g. plant health, may make the observation of the characteristic impossible.

The Administrative Council empowers the President, in accordance with Article 23 of Commission Regulation (EC) No.874/2009, to insert additional characteristics and their expressions in respect of a variety.

4. Grouping of varieties

The varieties and candidates to be compared will 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 and which in their various states of expression are fairly evenly distributed throughout the collection. In the case of continuous grouping characteristics overlapping states of expression between adjacent groups is required to reduce the risks of incorrect allocation of candidates to groups. The characteristics used for grouping could be the following:

a) Outer leaf: colour (with wax) (characteristic 11)

b) Head: shape in longitudinal section (characteristic 17)

c) Head: diameter (characteristic 20)

d) Head: density (characteristic 30)

e) Time of harvest maturity (characteristic 33)

f) Male sterility (characteristic 35)

5. Trial designs and growing conditions

The minimum duration of tests will normally be two independent growing cycles. Tests will be carried out under conditions ensuring normal growth. The size of the plots will be such that plants or parts of plants may be removed for measuring and counting without prejudice to the observations which must be made up to the end of the growing period.

The test design is as follows:

As a minimum, each test should include a total of 60 plants, divided between two or more replicates.

All observations determined by measurement or counting should be made on 20 plants or parts of 20 plants.

6. Special tests

In accordance with Article 83(3) of Council Regulation (EC) No. 2100/94 an applicant may claim either in the Technical Questionnaire or during the test that a candidate has a characteristic which would be helpful in establishing distinctness. If such a claim is made and is supported by reliable technical data, a special test may be undertaken providing that a technically acceptable test procedure can be devised.

Special tests will be undertaken, with the agreement of the President of CPVO, where distinctness is unlikely to be shown using the characters listed in the protocol.

7. Standards for decisions

a) **Distinctness**

A candidate variety will be considered to be distinct if it meets the requirements of Article 7 of Council Regulation (EC) No. 2100/94.

b) **Uniformity**

For the assessment of uniformity of:

(i) Cross pollinated and hybrid varieties (excluding single cross hybrids), relative uniformity standards should be applied

(ii) Vegetatively propagated varieties, single cross hybrids and inbred lines, a population standard of 1% and an acceptance probability of at least 95% should be applied.

Table of maximum number of off-types allowed for uniformity standards for vegetatively propagated varieties, single cross hybrids and inbred lines

Number of plants	Off-types allowed
36-82	2

c) **Stability**

A candidate will be considered to be sufficiently stable when there is no evidence to indicate that it lacks uniformity.

IV REPORTING OF RESULTS

After each recording season the results will be summarised and reported to the CPVO in the form of a UPOV model interim report in which any problems will be indicated under the headings distinctness, uniformity and stability. Candidates may meet the DUS standards after two growing periods but in some cases three growing periods may be required. When tests are completed the results will be sent by the Examination Office to the CPVO in the form of a UPOV model final report.

If it is considered that the candidate complies with the DUS standards, the final report will be accompanied by a variety description in the format recommended by UPOV. If not the reasons for failure and a summary of the test results will be included with the final report.

The CPVO must receive interim reports and final reports by the date agreed between the CPVO and the examination office.

Interim reports and final examination reports shall be signed by the responsible member of the staff of the Examination Office and shall expressly acknowledge the exclusive rights of disposal of CPVO.

V LIAISON WITH THE APPLICANT

If problems arise during the course of the test the CPVO should be informed immediately so that the information can be passed on to the applicant. Subject to prior agreement, the applicant may be directly informed at the same time as the CPVO particularly if a visit to the trial is advisable.

The interim report as well as the final report shall be sent by the Examination Office to the CPVO.

VI ENTRY INTO FORCE

The present protocol enters into force on **01/01/2011**. Any ongoing DUS examination of candidate varieties started before the aforesaid date will not be affected by the approval of the new TP. Technical examinations of candidate varieties are carried out according to the TP in force when the DUS test starts. The starting date of a DUS examination is considered to be the due date for the submission of plant material for the first growing period.

In cases where the CPVO requests to take-over a DUS report for which the technical examination has either been finalized or which is in the process of being carried out at the moment of the request, such report can only be accepted if the technical examination has been carried out according to the CPVO TP which was in force at the moment when the technical examination started.

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ANNEXES TO FOLLOW

ANNEX I PAGE

Legend:
R = red cabbage
S = savoy cabbage
W = white cabbage

Types of expression of characteristics:

QL Qualitative characteristic
QN Quantitative characteristic
PQ Pseudo-qualitative characteristic

Type of observation of characteristics:

MG Single measurement of a group of plants or parts of plants
MS Measurement of a number of individual plants or parts of plants
VG Visual assessment by a single observation of a group of plants or parts of plants
VS Visual assessment by observation of individual plants or parts of plants

When a method of observation is attributed to a certain characteristic, the first differentiation is made depending if the action taken is a visual observation (V) or a measurement (M).

The second differentiation deals with the number of observations the expert attributes to each variety, thus the attribution of either G or S.

If a single observation of a group consisting of an undefined number of individual plants is appropriate to assess the expression of a variety, we talk about a visual observation or a measurement made on a group of plants, thus we attribute the letter G (either VG or MG). If the expert makes more than one observation on that group of plants, the decisive part is that we have at the end only one data entry per variety which means that we have to deal with G (e.g. measurement of plant length on a plot – MG, visual observation of green colour of leaves on a plot – VG).

If it is necessary to observe a number of individual plants to assess the expression of a variety, we should attribute the letter S (thus either VS or MS). Single plant data entries are kept per variety for further calculations like the variety mean (e.g. measurement of length of ears – MS, visual observation of growth habit of single plants in grasses – VS). The number of individual plants to be observed in such cases is stated in section III.5.

ANNEX II

ANNEX I

TABLE OF CHARACTERISTICS TO BE USED IN DUS-TEST AND PREPARATION OF DESCRIPTIONS

CPVO No.	UPOV No.	Stage	Characteristics	Examples	Note
1.1	**1.1**	**VG**	**White cabbage varieties only:** **Plant: height**		
QN	**QN**		very short		1
			short	Gouden Akker, Minicole	3
			medium	Marner Lagerweiss, Strukton	5
			tall	Amager hochstrunkig, Thurner, Zerlina	7
			very tall	Filderkraut	9
1.2	**1.2**	**VG**	**Red cabbage varieties only:** **Plant: height**		
QN	**QN**		very short	Langedijker Allervroegste, Primero	1
			short	Marner Frührotkohl, Ruby Ball	3
			medium	Allrot, Roxy	5
			tall	Langedijker Bewaar 3, Langedijker Herfst, Rovita	7
			very tall		9
1.3	**1.3**	**VG**	**Savoy cabbage varieties only:** **Plant: height**		
QN	**QN**		very short		1
			short	Fitis, Vorbote 2	3
			medium	Marner Grünkopf	5
			tall	Hammer, Roi de l'hiver 2	7
			very tall	Bloemendaalse Gele	9
2.1	**2.1**	**VG**	**White cabbage varieties only:** **Plant: maximum diameter (including outer leaves)**		
QN	**QN**		small	Wiam	3
			medium	Marner Augustkohl	5
			large	Roem van Enkhuizen 2, Robuster	7

CPVO No.	UPOV No.	Stage	Characteristics	Examples	Note
2.2	**2.2**	**VG**	**<u>Red cabbage varieties only</u>: Plant: maximum diameter (as for 2.1)**		
QN	**QN**		small	Frührot, Primero	3
			medium	Allrot, Ruby Ball	5
			large	Marner Septemberrot, Rovita	7
2.3	**2.3**	**VG**	**<u>Savoy cabbage varieties only</u>: Plant: maximum diameter (as for 2.1)**		
QN	**QN**		small	Vorbote 2	3
			medium	Marner Grünkopf	5
			large	Hammer	7
3.	**3.**	**VG/MS**	**Plant: length of outer stem**		
QN	**QN**		short	Braunschweiger (W), Minicole (W), Vorox (R), Spivoy (S)	3
			medium	Bartolo (W), September (W), Langedijker Bewaar 2 (R), Belvoy (S)	5
			long	Amager hochstrunkig (W), Robuster (W), Pampa (S)	7
4.	**4.**	**VG**	**Plant: attitude of outer leaves**		
QN	**QN**		erect	Filderkraut (W), Slawdena (W)	3
			semi-erect	Braunschweiger (W)	5
			prostrate	Christmas Drumhead (W), Spring Hero (W)	7
5.1	**5.1**	**VG**	**<u>White cabbage varieties only</u>: Outer leaf size**		
QN	**QN**		small	Golden Cross	3
			medium	Atria, Braunschweiger, Marner Lagerweiss	5
			large	Robuster, Thurner	7

CPVO No.	UPOV No.	Stage	Characteristics	Examples	Note
5.2	**5.2**	**VG**	**<u>Red cabbage varieties only</u>: Outer leaf size**		
QN	**QN**		small	Langedijker Allervroegste, Primero	3
			medium	Langedijker Vroege, Ruby Ball	5
			large	Langedijker Herfst, Marner Lagerrot, Rovita	7
5.3	**5.3**	**VG**	**<u>Savoy cabbage varieties only</u>: Outer leaf size**		
QN	**QN**		small	Promasa	3
			medium	Belvoy	5
			large	Vertus 3	7
6.	**6.**	**VG**	**Outer leaf: shape of blade**		
(+)	**(+)**		elliptic	Filderkraut (W)	1
PQ	**PQ**		broad ovate	September (W)	2
			circular	Wiam (W)	3
			transverse broad elliptic	Rookie (R)	4
			obovate	Marksman (W)	5
7.	**7.**	**VG**	**Outer leaf: profile of upper side of blade**		
QN	**QN**		concave	Slawdena (W), Celsa (S)	1
			plane	Golden Cross (W), Allrot (R)	2
			convex	Comparsa (S)	3
8.1	**8.1**	**VG**	**<u>White and red cabbage varieties only</u>: Outer leaf: degree of blistering**		
QN	**QN**		absent or very weak	Slawdena (W), Rookie (R)	1
			moderate	Fieldrocket (W), Langedijker Herfst (R)	2
			strong	Roem van Enkhuizen 3 (W), Kissendrup (R)	3

CPVO No.	UPOV No.	Stage	Characteristics	Examples	Note
8.2	**8.2**	**VG**	**<u>Savoy cabbage varieties only</u>: Outer leaf: degree of blistering**		
QN	**QN**		absent or very weak	De Pointoise 2	1
			weak	Celsa	3
			medium	Savoy King	5
			strong	Hammer	7
			very strong	Novusa, Roi de l'hiver 2	9
9.1	**9.1**	**VG**	**<u>White and red cabbage varieties only</u>: Outer leaf: size of blisters**		
QN	**QN**		small	Hispi (W), Allrot (R)	3
			medium	Roem van Enkhuizen 2 (W), Kissendrup (R)	5
			large	Jason (W)	7
9.2	**9.2**	**VG**	**<u>Savoy cabbage varieties only</u>: Outer leaf: size of blisters**		
QN	**QN**		small	Roi de l'hiver 2	3
			medium	Hammer	5
			large	Vertus 2	7
10.	**10.**		**<u>Savoy cabbage varieties only</u>: Outer leaf: crimping**		
(+)	**(+)**		weak	Dauerwirsing	3
			medium	Savoy King	5
			strong	Hammer	7
11.	**11.**	**VG**	**Outer leaf: colour (with wax)**		
(+)	**(+)**		yellow green	April (W)	1
PQ	**PQ**		green	Hammer (S)	2
			grey green	Bison (W), Gloria (W), Roi de l'hiver 2 (S)	3
			blue green	Market Prize (W)	4
G			violet	Langedijker Bewaar 2 (R)	5

CPVO No.	UPOV No.	Stage	Characteristics	Examples	Note
12.	**12.**	**VG**	**Outer leaf: intensity of colour**		
QN	**QN**		light	Gouden Akker (W), Rebus (R), Bloemendaalse Gele (S)	3
			medium	Cabri (W), Redsky (R), Kilosa (S)	5
			dark	Excel (W), Integro (R), Norma (S)	7
13.	**13.**	**VG**	**<u>Red cabbage varieties only</u>: Outer leaf: green flush**		
QL	**QL**		absent	Autoro, Kissendrup	1
			present	Kempero, Roxy	9
14.	**14.**	**VG**	**Outer leaf: waxiness**		
QN	**QN**		absent or very weak	First of June (W)	1
			weak	Derby Day (W), Octoking (W)	3
			medium	Wiam (W), Celtic(S)	5
			strong	Thurner (W), Bison (W)	7
			very strong	Rivera (W), Indaro(R)	9
15.	**15.**	**VG**	**Outer leaf: undulation of margin**		
QN	**QN**		absent or very weak	Minicole (W)	1
			weak	Holsteiner platter (W)	3
			medium	Saturn (W), Dacato (S)	5
			strong	Snovoy (S)	7
			very strong	Roxy (R)	9
16.	**16.**	**VG**	**Outer leaf: reflexion of margin**		
QL	**QL**		absent	Slawdena (W)	1
			present	Rinda (W)	9

CPVO No.	UPOV No.	Stage	Characteristics	Examples	Note
17.	**17.**	**VG**	**Head: shape in longitudinal section**		
(+)	**(+)**		transverse narrow elliptic	Braunschweiger (W)	1
PQ	**PQ**		transverse elliptic	Centurion (W), Conquistador (W), De Pointoise 2 (S)	2
			circular	Octoking (W), Roem van Enkhuizen 2 (W)	3
			broad elliptic	Langedijker Herfst (R)	4
			broad obovate	Langedijker Bewaar (W)	5
			broad ovate	Cape Horn (W)	6
G			angular ovate	Filderkraut (W), Hispi (W)	7
18.	**18.**	**VG**	**Head: shape of base in longitudinal section**		
(+)	**(+)**		rounded		1
PQ	**PQ**		flat		2
			arched		3
19.	**19.**	**VG/MS**	**Head: length**		
QN	**QN**		short	Marner Allfrüh (W), Vorbote 2 (S)	3
			medium	Belvoy (S), Pampa (S)	5
			long	Offenham 3 (W)	7
20.	**20.**	**VG/MS**	**Head: diameter**		
QN	**QN**		small	Marner Allfrüh (W), Vorbote 2 (S)	3
			medium	Celsa (S), Pampa (S)	5
G			large	Braunschweiger (W), Quintal d'Alsace (W)	7
21.	**21.**	**VG**	**Head: position of maximum diameter**		
QN	**QN**		towards top	Slawdena (W)	1
			at middle	Derby Day (W), Gouden Akker (W)	2
			towards base	Hispi (W)	3

CPVO No.	UPOV No.	Stage	Characteristics	Examples	Note
22.	**22.**	**VG**	**Head: cover**		
(+)	**(+)**		not covered	Late Putjes (S)	1
QN	**QN**		partially covered	Holsteiner platter (W)	2
			covered	Langedijker Bewaar 2 (R)	3
23.	**23.**	**VG**	**Savoy cabbage varieties only: Head: blistering of cover leaf**		
QN	**QN**		absent or very weak	De Pointoise 2	1
			weak	Celtic	3
			medium	Julius	5
			strong	Hammer	7
			very strong	Roi de l'hiver 2	9
24.	**24.**	**VG**	**Head: reflexion of margin of cover leaf**		
Qn	**QN**		absent	Apex(W), Morgan (W)	1
			present	Orbit (W)	9
25.	**25.**	**VG**	**Head: colour of cover leaf**		
(+)	**(+)**		yellow green	April (W), Octoking (W)	1
PQ	**PQ**		green	Hammer (S)	2
			grey green	Roi de l'hiver 2 (S)	3
			blue green		4
			violet	Kissendrup (R)	5
26.	**26.**	**VG**	**Head: intensity of colour of cover leaf**		
QN	**QN**		light		3
			medium		5
			dark		7

CPVO No.	UPOV No.	Stage	Characteristics	Examples	Note
27.	**27.**	**VG**	**<u>White cabbage and Savoy cabbage varieties only</u>: Head: anthocyanin coloration of cover leaf**		
QN	**QN**		absent or very weak	Hammer (S)	1
			weak	Slawdena (W)	3
			medium	De Pontoise 2 (S)	5
			strong	Marabel (S)	7
			very strong		9
28.	**28.**	**VG**	**Head: internal colour**		
QN	**QN**		whitish	Slawdena (W)	1
			yellowish	Langedijker Bewaargele (S)	2
			greenish		3
			violet	Langedijker Herfst (R)	4
29.	**29.**	**VG**	**<u>Red cabbage varieties only</u>: Head: intensity of internal colour**		
QN	**QN**		light		3
			medium		5
			dark		7
30.	**30.**	**VG**	**Head: density**		
(+)	**(+)**		very loose	Mignon (W)	1
QN	**QN**		loose	Hornspi (W)	3
			medium	Dacato (S), Spivoy (S)	5
			dense	Pampa (S)	7
G			very dense	Slawdena (W)	9
31.	**31.**	**VG**	**Head: internal structure**		
(+)	**(+)**		fine	Slawdena (W), Quintal d'Alsace (W)	3
QN	**QN**		medium	Langedijker Herfst (R)	5
			coarse	Filderkraut (W), Roem van Enkhuizen 2 (W)	7

CPVO No.	UPOV No.	Stage	Characteristics	Examples	Note
32.	**32.**	**VG**	**Head: relative length of interior stem compared to length of head**		
(+)	**(+)**		short	Erdeno (W)	3
QN	**QN**		medium	Slawdena (W)	5
			long	Braunschweiger (W), Belvoy (S)	7
33.1	**33.1**	**VG**	**White cabbage varieties only: Time of harvest maturity**		
QN	**QN**		very early	Golden Cross	1
			early	Green Express, Hijula	3
			medium	Roem van Enkhuizen 2	5
			late	Holsteiner platter, Marner Lagerweiss, Strukton	7
G			very late	Bartolo	9
33.2	**33.2**	**VG**	**Red cabbage varieties only: Time of harvest maturity**		
QN	**QN**		early	Langedijker Vroege, Normiro, Ruby Ball	3
			medium	Autoro, Langedijker Herfst, Marner Septemberrot	5
G			late	Huzaro, Langedijker Bewaar 2, Marner Lagerrot	7
33.3	**33.3**	**VG**	**Savoy cabbage varieties only: Time of harvest maturity**		
QN	**QN**		very early	Spivoy	1
			early	Walasa	3
			medium	Belvoy	5
			late	Hammer	7
G			very late	Alexander's N°1	9

CPVO No.	UPOV No.	Stage	Characteristics	Examples	Note
34.	**34.**	**VG**	**Time of bursting of head after maturity**		
QN	**QN**		early	Winnigstadt (W), Primero (R), Curosa (S)	3
			medium	Excel (W), Pluton (R), Ruby Ball (R), Emerald (S)	5
			late	Quisto (W), Induro (R), Ermosa (S)	7
35.	**35.**	**VS**	**Male sterility**		
(+) QL	**(+) QL**		absent	Winnigstadt (W), Pluton (R), Belvoy (S)	1
G			present	Unifor (W), Roderick (R), Emerald (S)	9

Note: Only resistances marked with an asterisk (*) are compulsory.
In general for the assessment of resistance characteristics, the facilities of other Examination Offices or specialised institutions might be used, subject to previous arrangements. Some characteristics may be discarded: if there are already phytosanitary restrictions.

36.	**36.**	**VS**	**Resistance to race 1 of *Fusarium oxysporum* f. sp. *conglutinans***		
(+)	**(+)**		absent	Roem van Enkhuizen 2(W)	1
QL	**QL**		present	Delight YR(W), Gloria (W)	9

EXPLANATIONS AND METHODS

Ad. 6: Outer leaf: shape of blade

1 elliptic | 2 broad ovate | 3 circular | 4 transverse broad elliptic | 5 obovate

The leaf should be flattened out as far as possible before observation.

Ad 10: Savoy cabbage varieties only: Outer leaf: crimping

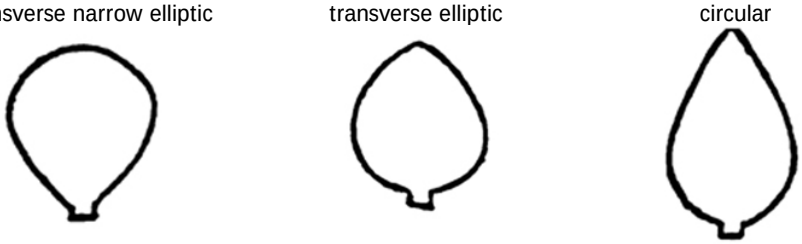
Crimping is the undulation of the leaf blade tissue between the secondary veins.

Ad 11 and 25: Outer leaf (with wax): Head: colour of cover leaf

States 1 to 4 apply to white and Savoy cabbage only and state 5, violet, is only to be used for red cabbage varieties.

Ad 17: Head: shape in longitudinal section

1 transverse narrow elliptic | 2 transverse elliptic | 3 circular | 4 broad elliptic



5 broad obovate | 6 broad ovate | 7 angular ovate

Ad 18: Head: shape of base in longitudinal section

1 rounded | 2 flat | 3 arched

Ad 22: Head: cover

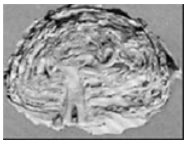
1
not covered

2
partially covered

3
covered

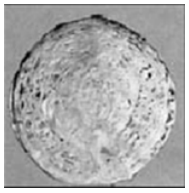
Ad 30: Head: density

1
very loose

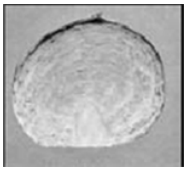


3
loose

5
medium



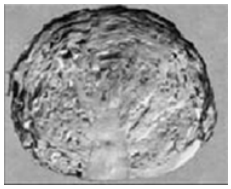
7
dense



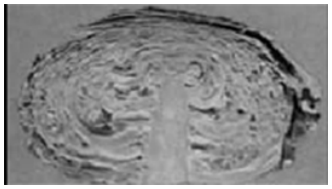
9
very dense

Ad 31: Head: internal structure

3
fine



5
medium



7
coarse

Ad 32: Head: relative length of interior stem compare to length of head

short (note 3)	relative length of interior stem approximately 1/8 compared to length of head
medium (note 5)	relative length of interior stem approximately 1/4 compared to length of head
long (note 7)	relative length of interior stem approximately 1/2 compared to length of head

Ad 35: Male sterility

Check presence of pollen on stamen:

(a) if pollen on stamen is present than male sterility is absent;
(b) if pollen on stamen is absent than male sterility is present.

Note: for F1 hybrids, depending on the composition of the parent lines, male sterility may not be fully present

Ad 36: Resistance to race 1 of *Fusarium oxysporum* f. sp. *conglutinans*

Records must be taken under conditions of controlled infection.

Maintenance of races

Type of medium: on agar medium at 20°C

Special conditions:	multiplication by passing on parts of the agar medium to liquid Czapek-Dox-Broth. This liquid medium must be shaken permanently.

Execution of test

Growth stage of plants:	young plants, about two weeks after sowing
Temperature:	about 25°C
Light:	normal glasshouse conditions
Growing method:	seeds sown in peat soil at rather low temperature: 12 – 14 °C during day time and 10 – 12 °C during night time
Method of inoculation:	roots of lifted young plants are soaked for 5 minutes in a suspension of spores and parts of mycelium, thereafter replanting
Duration of test:	
- from sowing to inoculation:	2 weeks
- from inoculation to reading:	first symptoms 7 days after inoculation, final reading 18 days after inoculation
Number of plants tested:	20
Remarks:	The disease might be a quarantine-disease in some countries. Race 1 of this pathogen is common; very rarely other races occur.

LITERATURE

HIGGINS, J., SPARKS, T.H., EVANS, J.L. and LAW, J.R., 1986: "Crop Identification of Some Brassica oleracea Cultivars," Acta Horticulturae, 182, pp. 285-291

JENSMA, J.R., 1956: "Cabbage Varieties," Instituut voor de veredeling van tuinbouwgewassen, Wageningen, NL

NIEUWHOF, 1969: "Cole Crops: Botany, Cultivation and Utilization," London, Leonard Hill, GB

SIEMONSMA and PILUK, 1993: “Plant resources of South-East Asia 8, Vegetables”, Prosea 8

TSUNODA, S., HINATA, K. and GOMEZ-CAMPO, C., 1980: "Brassica Crops and Wild Allies - Biology and Breeding," Japan Scientific Societies Press, Tokyo, JP

ANNEX II

CPVO · OCVV
Community Plant Variety Office
Office Communautaire des Variétés Végétales

TECHNICAL QUESTIONNAIRE

to be completed in connection with an application for Community Plant Variety Rights
Please answer all questions. A question without any answer will lead to a non-attribution of an application date. In cases where a field / question is not applicable, please state so.

1. **Botanical taxon:** Name of the genus, species or sub-species to which the variety belongs and common name

(i) *Brasssica oleracea* L. convar. *capitata* (L.) Alef. var. *alba* D.C.

WHITE CABBAGE

(ii) *Brasssica oleracea* L. convar. *capitata* (L.) Alef. var. *rubra* D.C.

RED CABBAGE

(iii) *Brasssica oleracea* L. convar. *capitata* (L.) Alef. var. *sabauda* D.C.

SAVOY CABBAGE

(iv) Intersubspecific hybrid of the above groups (give details):

2. **Applicant(s):** Name(s) and address(es), phone and fax number(s), Email address, and where appropriate name and address of the procedural representative

3. Variety denomination

a) Where appropriate proposal for a variety denomination:

b) Provisional designation (breeder's reference):

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

4.1 Breeding, maintenance and reproduction of the variety
Please indicate breeding scheme, parents, other relevant information

(a)
(i) hybrid ..... [ ]

(ii) open-pollinated variety..... [ ]

(iii) parent line ..... [ ]

(b)
(i) seed propagated ..... [ ]

(ii) vegetatively propagated..... [ ]

(c) Other information on genetic origin and breeding method ..... [ ]

4.2 Method of propagating the variety

(a) Seed propagated varieties

(i) Cross-pollination ..... [ ]

(ii) Hybrid

seed-propagated parents ..... [ ]

one vegetatively propagated and one seed-propagated parent ..... [ ]

two vegetatively propagated parents ..... [ ]

(iii) Other (please provide details) ..... [ ]

(b) Vegetative propagated varieties

(i) cuttings ..... [ ]

(ii) *in vitro* propagation ..... [ ]

(iii) other (state method) ..... [ ]

4.3 Geographical origin of the variety: the region and the country in which the variety was bred or discovered and developed

4.4 Shall the information on data relating to components of hybrid varieties including data related to their cultivation be treated as confidential?

[ ] YES [ ] NO

If yes, please give this information on the attached form for confidential information.

If no, please give information on data relating to components of hybrid varieties including data related to their cultivation:

Breeding scheme (indicate female component first)

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

	Characteristics	Example varieties	Note
5.1.1 (1.1)	**<u>White cabbage varieties only</u>: Plant: height**		
	very short		1 [ ]
	short	Gouden Akker, Minicole	3 [ ]
	medium	Marner Lagerweiss, Strukton	5 [ ]
	tall	Amager hochstrunkig, Thurner, Zerlina	7 [ ]
	very tall	Filderkraut	9 [ ]
5.1.2 (1.2)	**<u>Red cabbage varieties only</u>: Plant: height**		
	very short	Langedijker Allervroegste, Primero	1 [ ]
	short	Marner Frührotkohl, Ruby Ball	3 [ ]
	medium	Allrot, Roxy	5 [ ]
	tall	Langedijker Bewaar 3, Langedijker Herfst, Rovita	7 [ ]
	very tall		9 [ ]
5.1.3 (1.3)	**<u>Savoy cabbage varieties only</u>: Plant: height**		
	very short		1 [ ]
	short	Fitis, Vorbote 2	3 [ ]
	medium	Marner Grünkopf	5 [ ]
	tall	Hammer, Roi de l'hiver 2	7 [ ]
	very tall	Bloemendaalse Gele	9 [ ]
5.2.1 (5.1)	**<u>White cabbage varieties only</u>: Outer leaf: size**		
	small	Golden Cross	3 [ ]
	medium	Atria, Braunschweiger, Marner Lagerweiss	5 [ ]
	large	Robuster, Thurner	7 [ ]

	Characteristics	Example varieties	Note
5.2.2 (5.2)	**Red cabbage varieties only: Outer leaf: size**		
	small	Langedijker Allervroegste, Primero	3 [ ]
	medium	Langedijker Vroege, Ruby Ball	5 [ ]
	large	Langedijker Herfst, Marner Lagerrot, Rovita	7 [ ]
5.2.3 (5.3)	**Savoy cabbage varieties only: Outer leaf: size**		
	small	Promasa	3 [ ]
	medium	Belvoy	5 [ ]
	large	Vertus 3	7 [ ]
5.3.1 (8.1)	**White and red cabbage varieties only: Outer leaf: degree of blistering**		
	absent or very weak	Slawdena (W), Rookie (R)	1 [ ]
	moderate	Fieldrocket (W), Langedijker Herfst (R)	2 [ ]
	strong	Roem van Enkhuizen 3 (W), Kissendrup (R)	3 [ ]
5.3.2 (8.2)	**Savoy cabbage varieties only: Outer leaf: degree of blistering**		
	absent or very weak	De Pointoise 2	1 [ ]
	weak	Celsa	3 [ ]
	moderate	Savoy King	5 [ ]
	strong	Hammer	7 [ ]
	very strong	Novusa, Roi de l'hiver 2	9 [ ]
5.4 (11)	**Outer leaf: colour (with wax)**		
	yellow green	April (W)	1 [ ]
	green	Hammer (S)	2 [ ]
	grey green	Bison (W), Gloria (W), Roi de l'hiver 2 (S)	3 [ ]
	blue green	Market Prize (W)	4 [ ]
	violet	Langedijker Bewaar 2 (R)	5 [ ]

	Characteristics	Example varieties	Note
5.5 (12)	**Outer leaf: intensity of colour**		
	light	Gouden Akker (W), Rebus (R), Bloemendaalse Gele (S)	3 [ ]
	medium	Cabri (W), Redsky (R), Kilosa (S)	5 [ ]
	dark	Excel (W), Integro (R), Norma (S)	7 [ ]
5.6 (17)	**Head: shape in longitudinal seciotn**		
	transverse narrow elliptic	Braunschweiger (W)	1 [ ]
	transverse elliptic	Centurion (W), Conquistador (W), De Pointoise 2 (S)	2 [ ]
	circular	Octoking (W), Roem van Enkhuizen 2 (W)	3 [ ]
	broad elliptic	Langedijker Herfst (R)	4 [ ]
	broad obovate	Langedijker Bewaar (W)	5 [ ]
	broad ovate	Cape Horn (W)	6 [ ]
	angular ovate	Filderkraut (W), Hispi (W)	7 [ ]
5.7 (20)	**Head: diameter**		
	small	Marner Allfrüh (W), Vorbote 2 (S)	3 [ ]
	medium	Celsa (S), Pampa (S)	5 [ ]
	large	Braunschweiger (W), Quintal d'Alsace (W)	7 [ ]
5.8 (30)	**Head: density**		
	very loose	Mignon (W)	1 [ ]
	loose	Hornspi (W)	3 [ ]
	medium	Dacato (S), Spivoy (S)	5 [ ]
	dense	Pampa (S)	7 [ ]
	very dense	Slawdena (W)	9 [ ]

Characteristics		Example varieties	Note
5.9.1 (33.1)	**<u>White cabbage varieties only</u>: Time of harvest maturity**		
	very early	Golden Cross	1 [ ]
	early	Green Express, Hijula	3 [ ]
	medium	Roem van Enkhuizen 2	5 [ ]
	late	Holsteiner Platter, Marner Lagerweiss, Strukton	7 [ ]
	very late	Bartolo	9 [ ]
5.9.2 (33.2)	**<u>Red cabbage varieties only</u>: Time of harvest maturity**		
	early	Langedijker Vroege, Normiro, Ruby Ball	3 [ ]
	medium	Autoro, Langedijker Herfst, Marner Septemberrot	5 [ ]
	late	Huzaro, Langedijker Bewaar, Marner Lagerrot	7 [ ]
5.9.3 (33.3)	**<u>Savoy cabbage varieties only</u>: Time of harvest maturity**		
	very early	Spivoy	1 [ ]
	early	Walasa	3 [ ]
	medium	Belvoy	5 [ ]
	late	Hammer	7 [ ]
	very late	Alexander's N°.1	9 [ ]
5.10 (35)	**Male sterility**		
	absent	Winnigstadt (W), Pluton (R), Belvoy (S)	1 [ ]
	present	Unifor (W), Roderick (R), Emerald (S)	9 [ ]

6. Similar varieties and differences from these varieties:

Denomination of similar variety	Characteristic in which the similar variety is different[1)]	State of expression of similar variety	State of expression of candidate variety

[1)] 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

	absent	present	not tested
- *Fusarium oxysporum* f. sp. *conglutinans*;(Characteristic 36)	[ ]	[ ]	[ ]
- Other (specify)	[ ]	[ ]	[ ]

7.2 Special conditions for the examination of the variety

[ ] YES, please specify

[ ] NO

7.3 Other information

[ ] YES, please specify

[ ] NO

8. GMO-information required

The variety represents a Genetically Modified Organism within the meaning of Article 2(2) of Council Directive EC/2001/18 of 12/03/2001.

[ ] YES [ ] NO

If yes, please add a copy of the written attestation of the responsible authorities stating that a technical examination of the variety under Articles 55 and 56 of the Basic Regulation (EC) No. 2100/94 does not pose risks to the environment according to the norms of the above-mentioned Directive.

9. Information on plant material to be examined

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

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

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

Please provide details of where you have indicated “Yes”:

10. Possible place of the technical examination

In case the CPVO needs to arrange a technical examination for this candidate variety, there might be more than one examination office entrusted by the CPVO suitable to grow your variety. In this case, the Office will decide on the place of the technical examination but you might wish to express here a preference in respect of an examination office. The available entrusted examination offices for that species can be found in the S2 Gazette under http://www.cpvo.europa.eu/main/en/home/documents-and-publications/s2-gazette

I/we hereby declare that to the best of my/our knowledge the information given in this form is complete and correct.

Date Signature Name

[End of document]