



**PROTOCOL FOR DISTINCTNESS, UNIFORMITY AND STABILITY TESTS**

*Spinacea oleracea* L.

**SPINACH**

UPOV Code: SPINA\_OLE

**Adopted on 11/03/2010**

**Entered into force on 12/03/2010**

## **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/55/7 dated 28/03/2007 for the conduct of tests for Distinctness, Uniformity and Stability. This protocol applies to varieties of *Spinacea oleracea* L.

## **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 current quality and quantity requirements as well as the final dates for submission of the plant material are available on the CPVO website ([www.cpvo.europa.eu](http://www.cpvo.europa.eu)) and are published in the CPVO gazette 'S2'.

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"

### 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 spinach. 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.1239/95, 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 are the following:

- a) Leaf blade: intensity of green colour (characteristic 3)
- b) Leaf blade: blistering (characteristic 4)
- c) Proportion of monoecious plants (characteristic 13)
- d) Proportion of female plants (characteristic 14)
- e) Proportion of male plants (characteristic 15)
- f) Time of start of bolting (for spring sown crops, 15% of plants) (characteristic 16)
- g) Resistance to *Peronospora farinosa* f. sp. *spinaciae* race Pfs: 5 (char. 18.5)
- h) Resistance to *Peronospora farinosa* f. sp. *spinaciae* race Pfs: 6 (char. 18.6)
- i) Resistance to *Peronospora farinosa* f. sp. *spinaciae* race Pfs: 7 (char. 18.7)

5. Trial designs and growing conditions

The minimum duration of tests will normally be two independent growing cycles. For vegetatively propagated varieties, the duration of the testing may be reduced to one growing cycle if the results on distinctness and uniformity are conclusive. 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 100 single spaced plants divided between two or more replicates.

All observations determined by measurement or counting should be made on 60 plants or parts of 60 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 hybrid varieties a population standard of 2% with an acceptance probability of at least 95% should be applied to off-types excluding clearly recognisable inbred plants. . In the case of a sample size of 100 spaced plants the maximum number of off-types allowed would be 5. In addition a population standard of 3% with the same acceptance probability should be applied to clearly recognisable inbred plants.. In the case of a sample size of 100 spaced plants the additional maximum number of clearly recognisable inbred plants would be 6.

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 **12/03/2010**. 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

Table of characteristics..... 7

Explanations and methods ..... 12

#### Legend:

Note: For the CPVO numbered characteristics, all characteristics in the table are compulsory; notwithstanding, in the case of disease resistance characteristics, only those resistances marked with an asterisk (\*) in the CPVO column are compulsory. The asterisks in the UPOV numbered characteristics are there for information purposes and denote those characteristics which should always be observed when a UPOV guideline is utilised.

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.

- (+) See explanations on the Table of characteristics
- (a) See explanations on the table of characteristics
- G Grouping characteristic

#### 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.

Literature ..... 18

### ANNEX II

Technical Questionnaire

## ANNEX I

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

CPVO N°	UPOV N°	Stage, Method	Characteristics	Examples	Note
1.		VG	<b>Seed: spines (submitted seed)</b>		
			absent	Butterflay, Marimba	1
QL			present	Breedblad, Scherpzaad	9
2.	1.	VG	<b>Seedling: length of cotyledon</b>		
QN	QN		short	Nores	3
			medium		5
			long	Breedblad Scherpzaad, Resistoflay	7
3.	2.	VG	<b>Leaf blade: intensity of green colour</b>		
	(*)	(a)	very light		1
QN	QN		light	Monet, Viroflay, Winterreuzen	3
			medium	Butterflay, Monnopa	5
			dark	Imola, Lavewa, Nores	7
G			very dark	Lorelay, Mystic	9
4.	3.	VG	<b>Leaf blade: blistering</b>		
	(*)	(a)	absent or very weak	Matador	1
QN	QN		weak	Polka, Tarpy	3
			medium	Butterflay, Koala, Mystic	5
			strong	Giraffe, Rhythm	7
G			very strong	Menorca, Revolver	9
5.	4.	VG	<b>Leaf blade: lobing</b>		
	(*)	(a)	absent or very weak		1
(+)	(+)		weak	Butterflay, Giraffe	3
QN	QN		medium	Mystic	5
			strong	Parrot	7

CPVO N°	UPOV N°	Stage, Method	Characteristics	Examples	Note
6.	5.	VG (*) (a)	<b>Petiole: attitude</b>		
			erect	Grappa	1
			semi-erect	Monnopa, Parrot	3
QN	QN		horizontal	Comte, Lavewa	5
7.	6.	VG (a)	<b>Petiole: length</b>		
			short	Imola, Mystic	3
			medium	Butterfly, Giraffe	5
			long	Grappa, Resistoflay	7
8.	7.	VG (*) (a)	<b>Leaf blade: attitude</b>		
			erect		1
			semi-erect	Grappa, Monnopa, Rhythm	3
			horizontal	Lavewa, Mystic	5
			semi-pendulous	Giraffe, Medania	7
9.	8.	VG (*) (a)	<b>Leaf blade: shape (excluding basal lobes)</b>		
			triangular	Grappa, Maracas	1
			medium ovate	Lavewa, Resistoflay	2
			broad ovate	Butterfly	3
			medium elliptic		4
			broad elliptic	Nores	5
			circular	Giraffe	6
10.	9.	VG (a)	<b>Leaf blade: curving of margin</b>		
			incurved		1
			flat	Resistoflay	2
			recurved	Imola	3
11.	10.	VG (*) (a)	<b>Leaf blade: shape of apex</b>		
			acute	Grappa, Rhythm	1
			obtuse	Resistoflay	2
QN	QN		rounded	Imola, Nores	3



CPVO N°	UPOV N°	Stage, Method	Characteristics	Examples	Note	
12.	11.	VG (*) (a)	<b>Leaf blade: shape in longitudinal section</b>			
			concave		1	
			flat	Mystic, Resistoflay	2	
QN	QN		convex	Grappa, Lazio	3	
13.	12.	VS (*) (+)	<b>Proportion of monoecious plants</b>			
			absent or very low	Medania	1	
			low	Matador	3	
			medium	Figo	5	
			high	Giraffe, Lazio	7	
G		very high	Monnopa	9		
14.	13.	VS (*) (+)	<b>Proportion of female plants</b>			
			absent or very low	Monnopa	1	
			low	Giraffe	3	
			medium	Figo, Medania	5	
			high	Parrot	7	
G		very high		9		
15.	14.	VS (*) (+)	<b>Proportion of male plants</b>			
			absent or very low	Monnopa, Parrot	1	
			low		3	
			medium	Medania	5	
			high		7	
G		very high		9		
16.	15.	MG (*) (+)	<b>Time of start of bolting (for spring sown crops, 15% of plants)</b>			
			very early	Figo, Maracas	1	
			early	Bandola, Viroflay	3	
			medium	Matador, Monnopa	5	
			late	Grappa, Medania, Revolver	7	
G		very late	Chica, Lavewa	9		

CPVO N°	UPOV N°	Stage, Method	Characteristics	Examples	Note
<b>17.</b>	<b>16.</b>	<b>VG</b>	<b>Seed: spines (harvested seed)</b>		
(+)	(+)		absent	Resistoflay	1
QL	QL		present	Breedblad Scherpzaad, Marimba	9
<b>18.</b>	<b>17.</b>	<b>VG</b>	<b>Resistance to <i>Peronospora farinosa</i> f. sp. <i>spinaciae</i></b>		
(+)	(+)				
QL	QL				
<b>18.1</b>	<b>17.1</b>		<b>Race Pfs: 1</b>		
			absent	Viroflay, Winterreuzen	1
			present	Califlay, Resistoflay	9
<b>18.2</b>	<b>17.2</b>		<b>Race Pfs: 2</b>		
			absent	Califlay	1
			present	Resistoflay	9
<b>18.3</b>	<b>17.3</b>		<b>Race Pfs: 3</b>		
			absent	Resistoflay	1
			present	Califlay, Clermont	9
<b>18.4</b>	<b>17.4</b>		<b>Race Pfs: 4</b>		
			absent	Califlay	1
			present	Clermont	9
<b>18.5</b>	<b>17.5</b>		<b>Race Pfs: 5</b>		
(*)			absent	Clermont	1
G			present	Califlay, Campania	9
<b>18.6</b>	<b>17.6</b>		<b>Race Pfs: 6</b>		
(*)			absent	Califlay, Campania	1
G			present	Boeing	9
<b>18.7</b>	<b>17.7</b>		<b>Race Pfs: 7</b>		
(*)			absent	Califlay	1
G			present	Campania	9

CPVO N°	UPOV N°	Stage, Method	Characteristics	Examples	Note
18.8	17.8		<b>Race Pfs: 8</b>		
			absent	Boeing, Campania	1
			present	Lazio, Lion	9
18.9	17.9		<b>Race Pfs: 10</b>		
			absent	Boeing, Campania, Lion	1
			present	Lazio	9
18.10			<b>Race Pfs: 11</b>		
			absent	Lazio	1
			present	Boeing, Campania, Lion, Whale	9
19.	18.	VG	<b>Resistance to Cucumber mosaic virus (CMV)</b>		
(+)	(+)		absent	Polka	1
QL	QL		present	Symphony	9

## EXPLANATIONS AND METHODS

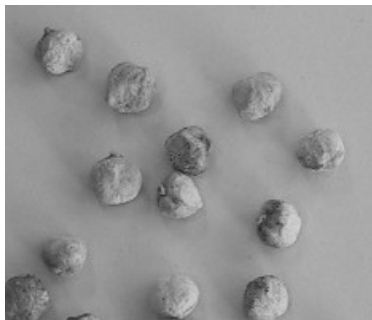
### 1 *Explanations covering several characteristics*

Characteristics containing the following key in the second column of the Table of Characteristics should be examined as indicated below:

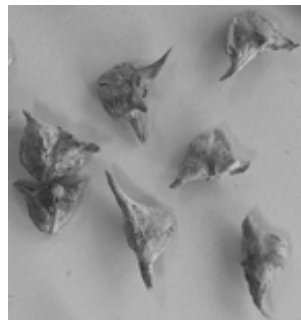
- (a) Observations on the leaf blade should be made on the seventh to tenth leaves of the adult not bolted plant. The shape of the leaf blade in longitudinal section should be observed on central leaves.

### 1 *Explanations covering several characteristics*

Ad 1: Seed: spines (submitted seed)



1  
absent

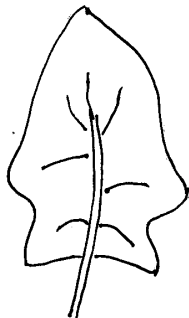


9  
present

Ad 5: Leaf blade: lobing



1  
absent or very weak



3  
weak

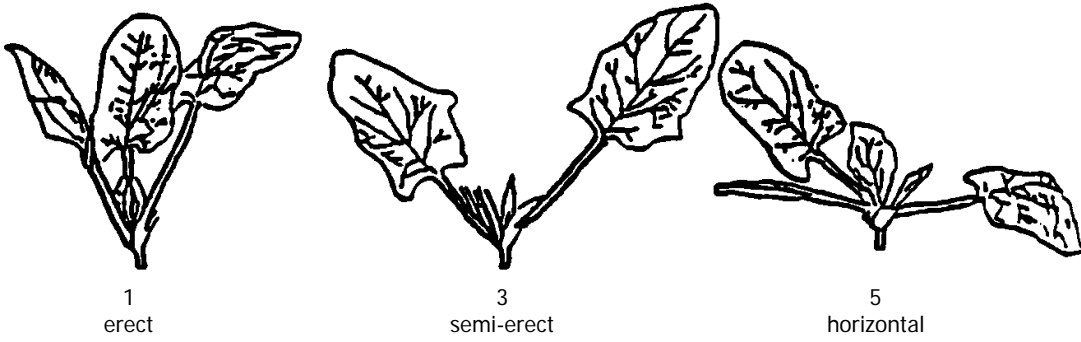


5  
medium



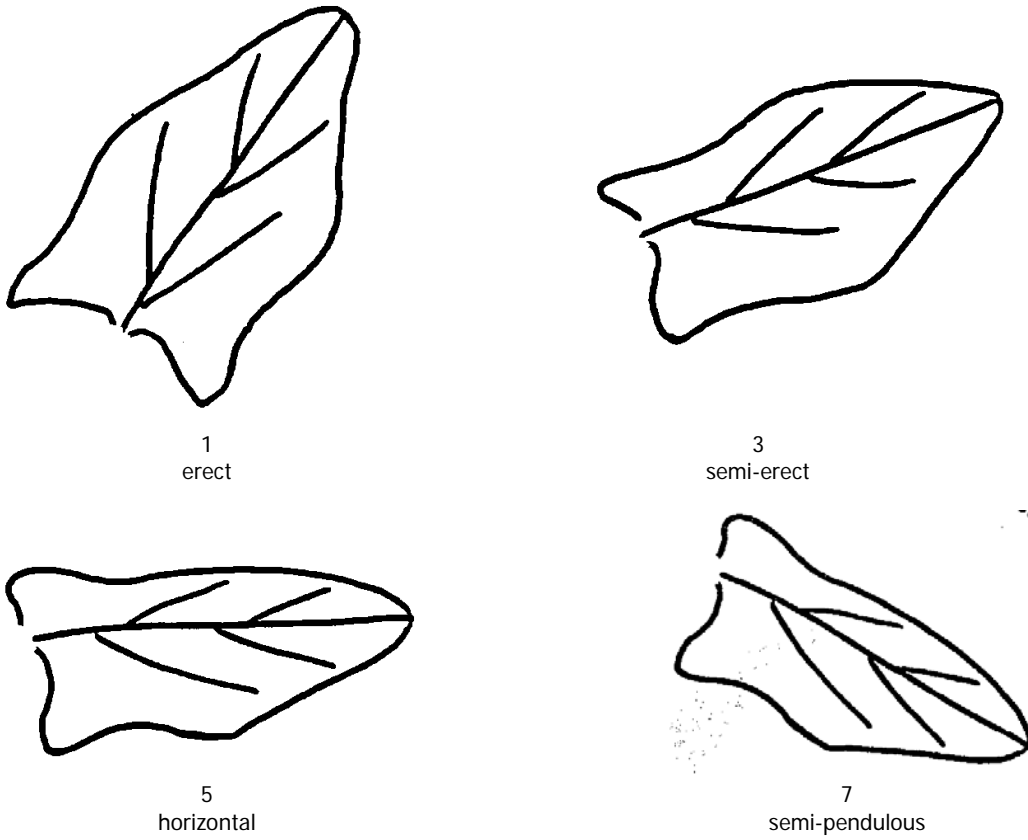
7  
strong

Ad 6 : Petiole: attitude



Ad 8: leaf blade: attitude

To be observed in relation to the horizontal, independent of the attitude of the petiole (characteristic 5).



Ad 13: Proportion of monoecious plants

Ad 14: Proportion of female plants

Ad 15: Proportion of male plants

Observations on the proportion of monoecious, female or male plants should be made at the beginning of seed setting. The three groups are defined as follows:

- Monoecious plants: plants which have both male flowers and female flowers (seeds clearly visible);
- Female plants: plants which have only female flowers (seeds clearly visible);
- Male plants: plants which have only male flowers.

	<u>Note</u>	<u>Approximate percentage</u>
absent or very low	1	< 10%
	2	20%
low	3	30%
	4	40%
medium	5	50%
	6	60%
high	7	70%
	8	80%
very high	9	> 90%

Ad 16: Time of start of bolting (for spring sown crops, 15% of plants)

The time of bolting of a plant is when the central flowering stem appears through stretching of the internodes.

Ad 17: Seed: spines (harvest seed)



1  
absent



9  
present

Ad 18: Resistance to *Peronospora farinosa* f. sp. *spinaciae*

Maintenance of races

Type of medium:

Living host plants, obtainable from:

Naktuinbouw  
P.O. Box 40  
NL-2370 AA Roelofarendsveen  
Netherlands  
www.naktuinbouw.com

or plant material with spores stored at -20° C for a maximum of one year

Execution of test:

Growth stage of plants:	First cotyledons/leaf, eleven-day-old plants
Temperature:	15°C during day/12°C during night
Light:	15 hours per day, after emergence
Growing method:	In soil in pots or trays in a glasshouse or growth chamber
Method of inoculation:	Sporulating leaves, taken from host plants that were infected seven days before, are thoroughly rinsed with sterile tap water (maximum 150 ml water per 224 plants). The spore suspension is filtered through cheesecloth and sprayed on test plants until the inoculum covers the leaves but does not run off. 150 ml of suspension is enough for up to 3 x 224 plants. Spore density should be 20,000 to 100,000 conidia/ml water. The spore suspension should be used fresh.
Remarks:	<p>Spinach downy mildew is wind-borne. Sporulating plants should be kept in closed containers or isolated chambers to prevent any cross-contamination. Resistant controls are needed in each multiplication and in each test to ensure the race identity.</p> <p>Light and humidity conditions during seedling development and incubation are critical. Optimal humidity of approximately 80-90% RH allows plant growth and fungal growth; strong light inhibits spore germination and infection.</p> <p>The test should be carried out in wintertime with protection against direct sunshine. After inoculation, the plants should remain under plastic for three days. After this time, the plastic should be slightly raised during the daytime.</p>

Duration of test:

- Multiplication	harvest spores 7 days after inoculation
- Sowing to inoculation:	11 days
- Inoculation to reading:	10 days

Number of plants tested: 56 plants

Evaluation of infection: Resistance is usually complete; sometimes necrotic spots are visible as a result of infection. Susceptible plants show varying degrees of sporulation. Sporulation is visible as a grey covering on leaves, starting on the more humid abaxial side.

Differential varieties to identify races:

Races Pfs: 1-8 and 10-11 of *Peronospora farinosa* f. sp. *spinaciae* are defined with a standard set of "differential varieties" according to the following table:

Differential variety	Pfs:1	Pfs:2	Pfs:3	Pfs:4	Pfs:5	Pfs:6	Pfs:7	Pfs:8	Pfs:10	Pfs:11
Viroflay	S	S	S	S	S	S	S	S	S	S
Resistoflay	R	R	S	S	S	S	S	S	S	S
Califlay	R	S	R	S	R	S	S	R	S	R
Clermont	R	R	R	R	S	S	S	S	S	S
Campania	R	R	R	R	R	S	R	S	S	R
Boeing	R	R	R	R	R	R	R	S	S	R
Lion	R	R	R	R	R	R	R	R	S	R
Lazio	R	R	R	R	R	R	R	R	R	S

Legend: R= resistance present; S = resistance absent, susceptible

Ad 18: Resistance to Cucumber mosaic virus (CMV)

Maintenance and propagation of isolates

Storage of medium: on leaves in freezer or desiccated over CaCl<sub>2</sub>

Special conditions: Isolates NL 16 and SP 43 which can be obtained from:  
PRI (Plant Research International)  
Prime Diagnostics  
P.O. Box 16  
NL-6700 AA Wageningen  
Netherlands  
[www.primediagnosics.nl](http://www.primediagnosics.nl)

Propagation: on susceptible cucumber plants

Execution of test

Growth stage of plants: when two or three true leaves are present

Temperature: 20°C during the day, 18°C during the night

Light: at least 16 hours per day

Growing method: plants grown in 5 x 5 cm module (potting soil)

Preparation of inoculum: a mixture of isolates is ground in water (dilution 1:10)

Method of inoculation: plants are dusted with carborundum powder on two or three leaves and then rubbed with a sponge soaked in inoculum. After inoculation, the plants are lightly rinsed with water.

Remarks: due to climatic conditions, the test is best carried out from February to June (Northern Hemisphere).



Observations

Time of observation: 7 to 9 days after inoculation

Symptoms:

resistant plant: no symptoms

sensitive plant: dwarf growth, mosaic symptoms in the heart of the plants

Differential host varieties to be used:

susceptible variety: Polka

resistant variety: Symphony

## LITERATURE

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## ANNEX II



### 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

*Spinacea oleracea* L.

SPINACH

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

**4.3 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)

<b>5. Characteristics of the variety to be indicated</b> (the number in brackets refers to the corresponding characteristic in the CPVO Protocol; please mark the state of expression which best corresponds).		
<b>Characteristics</b>	<b>Example varieties</b>	<b>Note</b>
<b>5.1 (3) Leaf blade: intensity of green colour</b>		
very light		1 [ ]
light	Monet, Viroflay, Winterreuzen	3 [ ]
medium	Butterflay, Monnopa	5 [ ]
dark	Imola, Lavewa, Nores	7 [ ]
very dark	Lorelay, Mystic	9 [ ]
<b>5.2 (4) Leaf blade: blistering</b>		
absent or very weak	Matador	1 [ ]
weak	Polka, Tarpy	3 [ ]
medium	Butterflay, Koala, Mystic	5 [ ]
strong	Giraffe, Rhythm	7 [ ]
very strong	Menorca, Revolver	9 [ ]
<b>5.3 (11) Leaf blade: shape of apex</b>		
acute	Grappa, Rhythm	1 [ ]
obtuse	Resistoflay	2 [ ]
rounded	Imola, Nores	3 [ ]
<b>5.4 (13) Proportion of monoecious plants</b>		
absent or very low	Medania	1 [ ]
low	Matador	3 [ ]
medium	Figo	5 [ ]
high	Giraffe, Lazio	7 [ ]
very high	Monnopa	9 [ ]

Characteristics	Example varieties	Note
<b>5.5 (14) Proportion of female plants</b>  absent or very low  low  medium  high  very high	Monnopa  Giraffe  Figo, Medania  Parrot	1 [ ]  3 [ ]  5 [ ]  7 [ ]  9 [ ]
<b>5.6 (15) Proportion of male plants</b>  absent or very low  low  medium  high  very high	Monnopa, Parrot    Medania	1 [ ]  3 [ ]  5 [ ]  7 [ ]  9 [ ]
<b>5.7 (16) Time of start of bolting (for spring sown crops, 15% of plants)</b>  very early  early  medium  late  very late	Figo, Maracas  Bandola, Viroflay  Matador, Monnopa  Grappa, Medania, Revolver  Chica, Lavewa	1 [ ]  3 [ ]  5 [ ]  7 [ ]  9 [ ]
<b>5.8 (18.5) Resistance to <i>Peronospora farinose f.sp .spinacae</i> race Pfs: 5</b>  absent  present	Clermont  Califlay, Campania	1 [ ]  9 [ ]
<b>5.9 (18.6) Resistance to <i>Peronospora farinose f.sp .spinacae</i> race Pfs: 6</b>  absent  present	Califlay, Campania  Boeing	1 [ ]  9 [ ]

Characteristics		Example varieties	Note	
<b>5.10 (18.7)</b>	<b>Resistance to <i>Peronospora farinosa</i> f.sp .<i>spinaciae</i> race Pfs: 7</b>			
	absent	Califlay	1 [ ]	
	present	Campania	9 [ ]	
<b>6. Similar varieties and differences from these varieties:</b>				
Denomination of similar variety	Characteristic in which the similar variety is different <sup>1)</sup>	State of expression of similar variety	State of expression of candidate variety	
<sup>1)</sup> In the case of identical states of expressions of both varieties, please indicate the size of the difference				
<b>7. Additional information which may help to distinguish the variety</b>				
<b>7.1 Resistance to pests and diseases (please specify races/strains if possible)</b>				
		absent	present	not tested
a) Resistance to <i>Peronospora farinosa</i> f. <i>spinaciae</i>				
(i) Race Pfs: 1		[ ]	[ ]	[ ]
(ii) Race Pfs:2		[ ]	[ ]	[ ]
(iii) Race Pfs:3		[ ]	[ ]	[ ]
(iv) Race Pfs:4		[ ]	[ ]	[ ]
(v) Race Pfs: 8		[ ]	[ ]	[ ]
(vi) Race Pfs: 10		[ ]	[ ]	[ ]
(vii) Race Pfs: 11		[ ]	[ ]	[ ]
b) Resistance to Cucumber Mosaic Virus (CMV)				
c) Other resistances				
		[ ]	[ ]	[ ]

**7.2 Special conditions for the examination of the variety**

YES, please specify

NO

**7.3 Other information**

YES, please specify

NO

**7.4 Variety use**

- only in glasshouse
- only in the open
- in the open and in glasshouse

**8. GMO-information required**

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

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]