

Technical Working Party for Vegetables

TWV/57/11

Fifty-Seventh Session

Antalya, Türkiye, May 1 to 5, 2023

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PARTIAL REVISION OF THE TEST GUIDELINES FOR SPINACH*Document prepared by an expert from the Netherlands**Disclaimer: this document does not represent UPOV policies or guidance*

1. The purpose of this document is to present a proposal for a partial revision of the Test Guidelines for Spinach (document TG/55/7 Rev. 7).
2. The Technical Working Party for Vegetables (TWV), at its fifty-sixth session¹, agreed that the Test Guidelines for Spinach (*Spinacea oleracea* L.) be partially revised (see document TWV/56/22 “Report”, Annex II).
3. The following changes are proposed:
 - Revision of characteristic and explanation 17 “Seed: spines (harvested seed)” (see document TWV/56/22 “Report”, Annex II)
 - Inclusion of characteristics from the Table of Characteristics in the Technical Questionnaire (see documents TWV/56/22 “Report”, paragraphs 102 and 103, and TWP/7/6 “Revision of Test Guidelines”)
4. The proposed changes are presented below in highlight and underline (insertion) and ~~striketrough~~ (deletion).

¹ organized by electronic means, from April 18 to 22, 2022

Proposed revision of Characteristic 17 "Seed: spines (harvested seed)"

Current wording

	English	français	Deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
17. VG (+)	Seed: spines (harvested seed)	Semence : épines (grains récoltés)	Samen: Stacheln (geernteter Samen)	Semilla: espinas (semilla cosechada)		
QL	absent	absentes	fehlend	ausentes	Resistoflay	1
	present	présentes	vorhanden	presentes	Breedblad Scherpzaad, Marimba	9

Proposed new wording

	English	français	Deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
17. VG (+)	Seed: spines (harvested seed) Plants: shape of pseudo fruit	Semence : épines (grains récoltés) Plante : forme du pseudo-fruit	Samen: Stacheln (geernteter Samen) Pflanze : Form der Pseudofrucht	Semilla: espinas (semilla cosechada) Planta: forma del pseudofruto		
QL QN	absent only plants with round pseudo fruits	absentes seulement plantes à pseudo-fruits ronds	fehlend nur Pflanzen mit runden Pseudofrüchten	ausentes sólo plantas con pseudofrutos redondos	Hudson, Resistoflay	1
	plants with round pseudo fruits and plants with spined pseudo fruits	plantes à pseudo-fruits ronds et plantes à pseudo-fruits épineux	Pflanzen mit runden Pseudofrüchten und Pflanzen mit dornigen Pseudofrüchten	plantas con pseudofrutos redondos y plantas con pseudofrutos espinosos	Baboon, Quinto	2
	present only plants with spined pseudo fruits	présentes seulement plantes à pseudo-fruits épineux	vorhanden nur Pflanzen mit dornigen Pseudofrüchten	presentes sólo plantas con pseudofrutos espinosos	Anlani, Breedblad Scherpzaad, Marimba	9 3

Proposed revision of explanation Ad. 17 “Seed: spines (harvested seed)”

Current wording

Ad. 17: Seed: spines (harvested seed)



1
absent



9
present

Proposed new wording

Ad. 17: ~~Seed: spines (harvested seed)~~ Plants: shape of pseudo fruit



1
absent

only plants with round pseudo fruits



9 3
present

only plants with spined pseudo fruits

The pseudo fruits to be assessed are developing on the plants grown of the submitted seed. The tissue of these pseudo fruits is the same as and thus part of the F1 plant. The F2 seed, enclosed by this pseudo fruit is not subject to observation.

Observations should be made on the plant when the pseudo fruits are fully developed, on female and monoecious plants. Varieties may consist of only plants with round pseudo fruits, only plants with spined pseudo fruits or of both plants with round pseudo fruits as well as plants with spined pseudo fruits.

The segregation of varieties with state of expression 2 (both plants with round pseudo fruits as well as plants with spined pseudo fruits) is a consequence of the fatherline used for the production of hybrids which is homogenic but heterozygous for the shape of the pseudo fruit. This line is propagated by crossing and selection to keep it heterozygous for this trait. The reason for this is to protect certain valuable traits. According to TG/1/3 paragraph 6.4.3.4.1 this is acceptable.

Proposed inclusion of characteristics from the Table of Characteristics in the Technical Questionnaire

5. The TWV is invited to consider the inclusion of the following characteristics in the TQ (characteristics for inclusion indicated in highlight and underline):

Char. No.	(*) Characteristic Name	Comments
1	<u>Seedling: length of cotyledon</u>	
2	(*) <u>Leaf: anthocyanin coloration of petioles and veins</u>	
3	(*) Leaf blade: intensity of green color	
4	(*) Leaf blade: blistering	
7	<u>Petiole: length</u>	
9	(*) <u>Leaf blade: shape (excluding basal lobes)</u>	
11	(*) Leaf blade: shape of apex	
13	(*) Proportion of monoecious plants	
14	(*) Proportion of female plants	
15	(*) Proportion of male plants	
16	(*) Time of start of bolting (for spring sown crops, 15% of plants)	
18.1	Resistance to <i>Peronospora effusa</i> (Pe) (ex <i>Peronospora farinosa</i> f. sp. <i>spinaciae</i>) Race Pe (ex Pfs): 1	with option "not tested"
18.2	Resistance to <i>Peronospora effusa</i> (Pe) (ex <i>Peronospora farinosa</i> f. sp. <i>spinaciae</i>) Race Pe (ex Pfs): 2	with option "not tested"
18.3	Resistance to <i>Peronospora effusa</i> (Pe) (ex <i>Peronospora farinosa</i> f. sp. <i>spinaciae</i>) Race Pe (ex Pfs): 3	with option "not tested"
18.4	Resistance to <i>Peronospora effusa</i> (Pe) (ex <i>Peronospora farinosa</i> f. sp. <i>spinaciae</i>) Race Pe (ex Pfs): 4	with option "not tested"
18.5	Resistance to <i>Peronospora effusa</i> (Pe) (ex <i>Peronospora farinosa</i> f. sp. <i>spinaciae</i>) Race Pe (ex Pfs): 5	with option "not tested"
18.6	Resistance to <i>Peronospora effusa</i> (Pe) (ex <i>Peronospora farinosa</i> f. sp. <i>spinaciae</i>) Race Pe (ex Pfs): 6	with option "not tested"
18.7	Resistance to <i>Peronospora effusa</i> (Pe) (ex <i>Peronospora farinosa</i> f. sp. <i>spinaciae</i>) Race Pe (ex Pfs): 7	with option "not tested"
18.8	Resistance to <i>Peronospora effusa</i> (Pe) (ex <i>Peronospora farinosa</i> f. sp. <i>spinaciae</i>) Race Pe (ex Pfs): 8	with option "not tested"
18.9	Resistance to <i>Peronospora effusa</i> (Pe) (ex <i>Peronospora farinosa</i> f. sp. <i>spinaciae</i>) Race Pe (ex Pfs): 10	with option "not tested"
18.10	Resistance to <i>Peronospora effusa</i> (Pe) (ex <i>Peronospora farinosa</i> f. sp. <i>spinaciae</i>) Race Pe (ex Pfs): 11	with option "not tested"
18.11	Resistance to <i>Peronospora effusa</i> (Pe) (ex <i>Peronospora farinosa</i> f. sp. <i>spinaciae</i>) Race Pe (ex Pfs): 12	with option "not tested"
18.12	Resistance to <i>Peronospora effusa</i> (Pe) (ex <i>Peronospora farinosa</i> f. sp. <i>spinaciae</i>) Race Pe (ex Pfs): 13	with option "not tested"
18.13	Resistance to <i>Peronospora effusa</i> (Pe) (ex <i>Peronospora farinosa</i> f. sp. <i>spinaciae</i>) Race Pe (ex Pfs): 14	with option "not tested"
18.14	Resistance to <i>Peronospora effusa</i> (Pe) (ex <i>Peronospora farinosa</i> f. sp. <i>spinaciae</i>) Race Pe (ex Pfs): 15	with option "not tested"
18.15	Resistance to <i>Peronospora effusa</i> (Pe) (ex <i>Peronospora farinosa</i> f. sp. <i>spinaciae</i>) Race Pe (ex Pfs): 16	with option "not tested"
18.16	Resistance to <i>Peronospora effusa</i> (Pe) (ex <i>Peronospora farinosa</i> f. sp. <i>spinaciae</i>) Race Pe (ex Pfs): 17	with option "not tested"
19	<u>Resistance to Cucumber mosaic virus (CMV)</u>	Currently in TQ 7 <u>without</u> option "Not tested"; "Not tested" added to TQ 5 (no (*))

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:
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5. Characteristics of the variety to be indicated (the number in brackets refers to the corresponding characteristic in Test Guidelines; please mark the note which best corresponds).

Characteristics	Example Varieties	Note
5.1 (1) <u>Seedling: length of cotyledon</u>		
<u>very short</u>		1[]
<u>very short to short</u>		2[]
<u>short</u>	<u>Nores</u>	3[]
<u>short to medium</u>		4[]
<u>medium</u>		5[]
<u>medium to long</u>		6[]
<u>long</u>	<u>Breedblad Scherpzaad,</u> <u>Resistoflay</u>	7[]
<u>long to very long</u>		8[]
<u>very long</u>		9[]
5.2 (2) <u>Leaf: anthocyanin coloration of petioles and veins</u>		
<u>absent</u>	<u>Resistoflay, Nores</u>	1[]
<u>present</u>	<u>Red Cardinal, Reddy</u>	2[]
5.4.3 (3) <u>Leaf blade: intensity of green color</u>		
<u>very light</u>		1[]
<u>very light to light</u>		2[]
<u>light</u>	<u>Monet, Viroflay, Winterreuzen</u>	3[]
<u>light to medium</u>		4[]
<u>medium</u>	<u>Butterflay, Monnopa</u>	5[]
<u>medium to dark</u>		6[]
<u>dark</u>	<u>Imola, Lavewa, Nores</u>	7[]
<u>dark to very dark</u>		8[]
<u>very dark</u>	<u>Lorelay, Mystic</u>	9[]

TECHNICAL QUESTIONNAIRE		Page {x} of {y}	Reference Number:
Characteristics	Example Varieties	Note	
5.2 4 (4)	Leaf blade: blistering		
absent or very weak	Matador	1[]	
<u>very weak to weak</u>		2[]	
weak	Polka, Tarpy	3[]	
<u>weak to medium</u>		4[]	
medium	Butterflay, Koala, Mystic	5[]	
<u>medium to strong</u>		6[]	
strong	Giraffe, Rhythm	7[]	
<u>strong to very strong</u>		8[]	
very strong	Menorca, Revolver	9[]	
5.5 (7)	Petiole: length		
<u>very short</u>		1[]	
<u>very short to short</u>		2[]	
<u>short</u>	<u>Imola, Mystic</u>	3[]	
<u>short to medium</u>		4[]	
<u>medium</u>	<u>Butterflay, Giraffe</u>	5[]	
<u>medium to long</u>		6[]	
<u>long</u>	<u>Grappa, Resistoflay</u>	7[]	
<u>long to very long</u>		8[]	
<u>very long</u>		9[]	
5.6 (9)	Leaf blade: shape (excluding basal lobes)		
<u>triangular</u>	<u>Grappa, Maracas</u>	1[]	
<u>medium ovate</u>	<u>Lavewa, Resistoflay</u>	2[]	
<u>broad ovate</u>	<u>Butterflay</u>	3[]	
<u>medium elliptic</u>		4[]	
<u>broad elliptic</u>	<u>Nores</u>	5[]	
<u>circular</u>	<u>Giraffe</u>	6[]	
5.3 7 (11)	Leaf blade: shape of apex		
acute	Grappa, Rhythm	1[]	
obtuse	Resistoflay	2[]	
rounded	Imola, Nores	3[]	

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:
Characteristics	Example Varieties	Note
5.4 8 Proportion of monoecious plants (13)		
absent or very low	Medania	1[]
<u>very low to low</u>		<u>2[]</u>
low	Matador	3[]
<u>low to medium</u>		<u>4[]</u>
medium	Figo	5[]
<u>medium to high</u>		<u>6[]</u>
high	Giraffe, Lazio	7[]
<u>high to very high</u>		<u>8[]</u>
very high	Monnopa	9[]
5.5 9 Proportion of female plants (14)		
absent or very low	Monnopa	1[]
<u>very low to low</u>		<u>2[]</u>
low	Giraffe	3[]
<u>low to medium</u>		<u>4[]</u>
medium	Figo, Medania	5[]
<u>medium to high</u>		<u>6[]</u>
high	Parrot	7[]
<u>high to very high</u>		<u>8[]</u>
very high		9[]
5.6 10 Proportion of male plants (15)		
absent or very low	Monnopa, Parrot	1[]
<u>very low to low</u>		<u>2[]</u>
low		3[]
<u>low to medium</u>		<u>4[]</u>
medium	Medania	5[]
<u>medium to high</u>		<u>6[]</u>
high		7[]
<u>high to very high</u>		<u>8[]</u>
very high		9[]

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:	
Characteristics	Example Varieties	Note	
5.7 11 Time of start of bolting (for spring sown crops, 15% of plants) (16)			
very early	Figo, Maracas	1 []	
<u>very early to early</u>		<u>2 []</u>	
early	Bandola, Viroflay	3 []	
<u>early to medium</u>		<u>4 []</u>	
medium	Matador, Monnopa	5 []	
<u>medium to late</u>		<u>6 []</u>	
late	Grappa, Medania, Revolver	7 []	
<u>late to very late</u>		<u>8 []</u>	
very late	Chica, Lavewa	9 []	
5.8 12 Resistance to <i>Peronospora effusa</i> (Pe) (ex <i>Peronospora farinosa</i> f. sp. <i>spinaciae</i>) Race Pe (ex Pfs): 1 (18.1)			
absent	Viroflay, Winterreuzen	1 []	
present	Califlay, Resistoflay	9 []	
not tested		[]	
5.9 13 Resistance to <i>Peronospora effusa</i> (Pe) (ex <i>Peronospora farinosa</i> f. sp. <i>spinaciae</i>) Race Pe (ex Pfs): 2 (18.2)			
absent	Califlay	1 []	
present	Resistoflay	9 []	
not tested		[]	
5.10 14 Resistance to <i>Peronospora effusa</i> (Pe) (ex <i>Peronospora farinosa</i> f. sp. <i>spinaciae</i>) Race Pe (ex Pfs): 3 (18.3)			
absent	Resistoflay	1 []	
present	Califlay, Clermont	9 []	
not tested		[]	
5.11 15 Resistance to <i>Peronospora effusa</i> (Pe) (ex <i>Peronospora farinosa</i> f. sp. <i>spinaciae</i>) Race Pe (ex Pfs): 4 (18.4)			
absent	Califlay	1 []	
present	Clermont	9 []	
not tested		[]	

TECHNICAL QUESTIONNAIRE		Page {x} of {y}	Reference Number:
Characteristics	Example Varieties	Note	
5.12 16 Resistance to <i>Peronospora effusa</i> (Pe) (ex <i>Peronospora farinosa</i> f. sp. <i>spinaciae</i>) Race Pe (ex Pfs): 5 (18.5)			
absent	Clermont	1 []	
present	Califlay, Campania	9 []	
not tested		[]	
5.13 17 Resistance to <i>Peronospora effusa</i> (Pe) (ex <i>Peronospora farinosa</i> f. sp. <i>spinaciae</i>) Race Pe (ex Pfs): 6 (18.6)			
absent	Califlay, Campania	1 []	
present	Boeing	9 []	
not tested		[]	
5.14 18 Resistance to <i>Peronospora effusa</i> (Pe) (ex <i>Peronospora farinosa</i> f. sp. <i>spinaciae</i>) Race Pe (ex Pfs): 7 (18.7)			
absent	Califlay	1 []	
present	Campania	9 []	
not tested		[]	
5.15 19 Resistance to <i>Peronospora effusa</i> (Pe) (ex <i>Peronospora farinosa</i> f. sp. <i>spinaciae</i>) Race Pe (ex Pfs): 8 (18.8)			
absent	Boeing, Campania	1 []	
present	Lazio, Lion	9 []	
not tested		[]	
5.16 20 Resistance to <i>Peronospora effusa</i> (Pe) (ex <i>Peronospora farinosa</i> f. sp. <i>spinaciae</i>) Race Pe (ex Pfs): 10 (18.9)			
absent	Boeing, Campania, Lion	1 []	
present	Lazio	9 []	
not tested		[]	
5.17 21 Resistance to <i>Peronospora effusa</i> (Pe) (ex <i>Peronospora farinosa</i> f. sp. <i>spinaciae</i>) Race Pe (ex Pfs): 11 (18.10)			
absent	Lazio	1 []	
present	Boeing, Califlay, Campania, Lion	9 []	
not tested		[]	

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:	
Characteristics	Example Varieties	Note	
5.18 22 Resistance to <i>Peronospora effusa</i> (Pe) (ex <i>Peronospora farinosa</i> f. sp. <i>spinaciae</i>) Race Pe (ex Pfs): 12 (18.11)			
absent	Boeing, Campania	1 []	
present	Finch, Pigeon, Red Kitten, Zebu	9 []	
not tested		[]	
5.19 23 Resistance to <i>Peronospora effusa</i> (Pe) (ex <i>Peronospora farinosa</i> f. sp. <i>spinaciae</i>) Race Pe (ex Pfs): 13 (18.12)			
absent	Campania	1 []	
present	Boeing, Lion	9 []	
not tested		[]	
5.20 24 Resistance to <i>Peronospora effusa</i> (Pe) (ex <i>Peronospora farinosa</i> f. sp. <i>spinaciae</i>) Race Pe (ex Pfs): 14 (18.13)			
absent	Campania, Pigeon	1 []	
present	Califlay, Lion	9 []	
not tested		[]	
5.21 25 Resistance to <i>Peronospora effusa</i> (Pe) (ex <i>Peronospora farinosa</i> f. sp. <i>spinaciae</i>) Race Pe (ex Pfs): 15 (18.14)			
absent	Caladonia	1 []	
present	Pigeon	9 []	
not tested		[]	
5.22 26 Resistance to <i>Peronospora effusa</i> (Pe) (ex <i>Peronospora farinosa</i> f. sp. <i>spinaciae</i>) Race Pe (ex Pfs): 16 (18.15)			
absent	Meerkat	1 []	
present	Caladonia	9 []	
not tested		[]	
5.23 27 Resistance to <i>Peronospora effusa</i> (Pe) (ex <i>Peronospora farinosa</i> f. sp. <i>spinaciae</i>) Race Pe (ex Pfs): 17 (18.16)			
absent	Pigeon	1 []	
present	Hydrus	9 []	
not tested		[]	
5.24 28 Resistance to <i>Peronospora effusa</i> (Pe) (ex <i>Peronospora farinosa</i> f. sp. <i>spinaciae</i>) Race Pe (ex Pfs): 18 (18.17)			
absent	Meerkat	1 []	
present	Caladonia	9 []	
not tested		[]	

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:	
Characteristics	Example Varieties	Note	
5.25 27 Resistance to <i>Peronospora effusa</i> (Pe) (ex <i>Peronospora farinosa</i> f. sp. <i>spinaciae</i>) Race Pe (ex Pfs): 19 (18.29)			
absent	Pigeon	1 []	
present	Hydrus	9 []	
not tested		[]	
5.28 Resistance to Cucumber mosaic virus (CMV) (19)			
<u>absent</u>	<u>Polka</u>	<u>1 []</u>	
<u>present</u>	<u>Symphony</u>	<u>9 []</u>	
<u>not tested</u>		<u>[]</u>	

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