

Technical Working Party for Vegetables

TWV/52/4

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PARTIAL REVISION OF THE TEST GUIDELINES FOR LETTUCE

Document prepared 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 lettuce (document TG/13/11).
2. The Technical Working Party for Vegetables (TWV), at its fift-first session, held in Roelofarendsveen, Netherlands, from July 3 to 7, 2017, agreed that the Test Guidelines for lettuce (document TG/13/11) be partially revised for new *Bremia lactucae* races and adaptation of *Bremia lactucae* race names (see document TWV/51/16 "Report", Annex IV).
3. The following changes are proposed:
 - (a) Revision of Characteristics 38 to 50: addition of "EU" to the isolate code;
 - (b) Addition of "Resistance to *Bremia lactucae* (BI) Isolate BI: 33EU" and "Resistance to *Bremia lactucae* (BI) Isolate BI: 35EU" including example varieties;
 - (c) Revision of explanation Ad. 38 to 50 in Chapter 8.2 "Explanations for individual characteristics";
 - (d) Addition of "Resistance to *Bremia lactucae* (BI) Isolate BI: 33EU" and "Resistance to *Bremia lactucae* (BI) Isolate BI: 35EU" to Chapter TQ 7.3 "Other information";
4. The proposed changes are presented below in highlight and underline (insertion) and ~~strikethrough~~ (deletion).

Proposal to revise Characteristics 38 to 50: addition of "EU" to the isolate code

	English		français	deutsch	español	Example Varieties Exemples Beispielsorten Variedades ejemplo	Note/ Nota
38.	QL	VG	(+)				
	Resistance to <i>Bremia lactuca</i> (BI) Isolate BI: 16<u>EU</u>		Résistance à <i>Bremia lactuca</i> (BI) Isolat BI: 16<u>EU</u>	Resistenz gegen <i>Bremia lactuca</i> (BI) Isolat BI: 16<u>EU</u>	Resistencia a <i>Bremia lactuca</i> (BI) Aislado BI: 16<u>EU</u>		
	absent		absente	fehlend	ausente	Green Towers	1
	present		présente	vorhanden	presente	Argelès	9
39.	QL	VG	(+)				
	Resistance to <i>Bremia lactuca</i> (BI) Isolate BI: 17<u>EU</u>		Résistance à <i>Bremia lactuca</i> (BI) Isolat BI: 17<u>EU</u>	Resistenz gegen <i>Bremia lactuca</i> (BI) Isolat BI: 17<u>EU</u>	Resistencia a <i>Bremia lactuca</i> (BI) Aislado BI: 17<u>EU</u>		
	absent		absente	fehlend	ausente	Green Towers	1
	present		présente	vorhanden	presente	Argelès	9
40.	QL	VG	(+)				
	Resistance to <i>Bremia lactuca</i> (BI) Isolate BI: 20<u>EU</u>		Résistance à <i>Bremia lactuca</i> (BI) Isolat BI: 20<u>EU</u>	Resistenz gegen <i>Bremia lactuca</i> (BI) Isolat BI: 20<u>EU</u>	Resistencia a <i>Bremia lactuca</i> (BI) Aislado BI: 20<u>EU</u>		
	absent		absente	fehlend	ausente	Green Towers	1
	present		présente	vorhanden	presente	FrRsal-1	9
41.	QL	VG	(+)				
	Resistance to <i>Bremia lactuca</i> (BI) Isolate BI: 21<u>EU</u>		Résistance à <i>Bremia lactuca</i> (BI) Isolat BI: 21<u>EU</u>	Resistenz gegen <i>Bremia lactuca</i> (BI) Isolat BI: 21<u>EU</u>	Resistencia a <i>Bremia lactuca</i> (BI) Aislado BI: 21<u>EU</u>		
	absent		absente	fehlend	ausente	Green Towers	1
	present		présente	vorhanden	presente	Argelès, Colorado	9
42.	QL	VG	(+)				
	Resistance to <i>Bremia lactuca</i> (BI) Isolate BI: 22<u>EU</u>		Résistance à <i>Bremia lactuca</i> (BI) Isolat BI: 22<u>EU</u>	Resistenz gegen <i>Bremia lactuca</i> (BI) Isolat BI: 22<u>EU</u>	Resistencia a <i>Bremia lactuca</i> (BI) Aislado BI: 22<u>EU</u>		
	absent		absente	fehlend	ausente	Green Towers	1
	present		présente	vorhanden	presente	FrRsal-1	9
43.	QL	VG	(+)				
	Resistance to <i>Bremia lactuca</i> (BI) Isolate BI: 23<u>EU</u>		Résistance à <i>Bremia lactuca</i> (BI) Isolat BI: 23<u>EU</u>	Resistenz gegen <i>Bremia lactuca</i> (BI) Isolat BI: 23<u>EU</u>	Resistencia a <i>Bremia lactuca</i> (BI) Aislado BI: 23<u>EU</u>		
	absent		absente	fehlend	ausente	Green Towers	1
	present		présente	vorhanden	presente	Colorado	9
44.	QL	VG	(+)				
	Resistance to <i>Bremia lactuca</i> (BI) Isolate BI: 24<u>EU</u>		Résistance à <i>Bremia lactuca</i> (BI) Isolat BI: 24<u>EU</u>	Resistenz gegen <i>Bremia lactuca</i> (BI) Isolat BI: 24<u>EU</u>	Resistencia a <i>Bremia lactuca</i> (BI) Aislado BI: 24<u>EU</u>		
	absent		absente	fehlend	ausente	Argelès, Colorado	1
	present		présente	vorhanden	presente	Dandie, NunDm15, UCDm14	9

	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
45.	QL VG	(+)				
	Resistance to <i>Bremia lactucae</i> (BI) Isolate BI: 25EU	Résistance à <i>Bremia lactucae</i> (BI) Isolat BI: 25EU	Resistenz gegen <i>Bremia lactucae</i> (BI) Isolat BI: 25EU	Resistencia a <i>Bremia lactucae</i> (BI) Aislado BI: 25EU		
	absent	absente	fehlend	ausente	Colorado	1
	present	présente	vorhanden	presente	Argelès	9
46.	QL VG	(+)				
	Resistance to <i>Bremia lactucae</i> (BI) Isolate BI: 26EU	Résistance à <i>Bremia lactucae</i> (BI) Isolat BI: 26EU	Resistenz gegen <i>Bremia lactucae</i> (BI) Isolat BI: 26EU	Resistencia a <i>Bremia lactucae</i> (BI) Aislado BI: 26EU		
	absent	absente	fehlend	ausente	Colorado	1
	present	présente	vorhanden	presente	Balesta, Bedford	9
47.	QL VG	(+)				
	Resistance to <i>Bremia lactucae</i> (BI) Isolate BI: 27EU	Résistance à <i>Bremia lactucae</i> (BI) Isolat BI: 27EU	Resistenz gegen <i>Bremia lactucae</i> (BI) Isolat BI: 27EU	Resistencia a <i>Bremia lactucae</i> (BI) Aislado BI: 27EU		
	absent	absente	fehlend	ausente	Balesta, Colorado	1
	present	présente	vorhanden	presente	FrRsal-1	9
48.	QL VG	(+)				
	Resistance to <i>Bremia lactucae</i> (BI) Isolate BI: 29EU	Résistance à <i>Bremia lactucae</i> (BI) Isolat BI: 29EU	Resistenz gegen <i>Bremia lactucae</i> (BI) Isolat BI: 29EU	Resistencia a <i>Bremia lactucae</i> (BI) Aislado BI: 29EU		
	absent	absente	fehlend	ausente	Argelès	1
	present	présente	vorhanden	presente	Balesta	9
49.	QL VG	(+)				
	Resistance to <i>Bremia lactucae</i> (BI) Isolate BI: 30EU	Résistance à <i>Bremia lactucae</i> (BI) Isolat BI: 30EU	Resistenz gegen <i>Bremia lactucae</i> (BI) Isolat BI: 30EU	Resistencia a <i>Bremia lactucae</i> (BI) Aislado BI: 30EU		
	absent	absent	fehlend	ausente	Argelès, Colorado	1
	present	present	vorhanden	presente	Balesta	9
50.	QL VG	(+)				
	Resistance to <i>Bremia lactucae</i> (BI) Isolate BI: 31EU	Résistance à <i>Bremia lactucae</i> (BI) Isolat BI: 31EU	Resistenz gegen <i>Bremia lactucae</i> (BI) Isolat BI: 31EU	Resistencia a <i>Bremia lactucae</i> (BI) Aislado BI: 31EU		
	absent	absente	fehlend	ausente	Colorado, RYZ910457	1
	present	présente	vorhanden	presente	Argelès, Balesta	9

Proposal to add “Resistance to *Bremia lactucae* (BI) Isolate BI: 33EU” and “Resistance to *Bremia lactucae* (BI) Isolate BI: 35EU” including example varieties

Current wording:

	English		français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
50.	QL	VG	(+)				
	Resistance to <i>Bremia lactucae</i> (BI) Isolate BI: 31		Résistance à <i>Bremia lactucae</i> (BI) Isolat BI: 31	Resistenz gegen <i>Bremia lactucae</i> (BI) Isolat BI: 31	Resistencia a <i>Bremia lactucae</i> (BI) Aislado BI: 31		
	absent		absente	fehlend	ausente	Colorado, RYZ910457	1
	present		présente	vorhanden	presente	Argelès, Balesta	9
51.	QL	VG	(+)				
	Resistance to <i>Lettuce mosaic virus</i> (LMV) Pathotype II		Résistance au <i>Lettuce mosaic virus</i> (LMV) Pathotype II	Resistenz gegen <i>Lettuce mosaic virus</i> (LMV) Pathotyp II	Resistencia al <i>Lettuce mosaic virus</i> (LMV), Patotipo II		
	absent		absente	fehlend	ausente	Bijou, Hilde II, Sprinter, Sucrine	1
	present		présente	vorhanden	presente	Capitan, Corsica	9
52.	QL	MS/VG	(+)				
	Resistance to <i>Nasonovia ribisnigri</i> (Nr) Biotype Nr: 0		Résistance à <i>Nasonovia ribisnigri</i> (Nr) Biotype Nr: 0	Resistenz gegen <i>Nasonovia ribisnigri</i> (Nr) Biotyp Nr: 0	Resistencia a <i>Nasonovia ribisnigri</i> (Nr) Biotipo Nº 0		
	absent		absente	fehlend	ausente	Abel, Green Towers, Nadine	1
	present		présente	vorhanden	presente	Barcelona, Bedford, Dynamite, Silvinas	9
53.	QN	MS/VG	(+)				
	Resistance to <i>Fusarium oxysporum</i> f.sp. <i>lactucae</i> (Fol) Race 1		Résistance à <i>Fusarium oxysporum</i> f.sp. <i>lactucae</i> (Fol) Race 1	Resistenz gegen <i>Fusarium oxysporum</i> f.sp. <i>lactucae</i> (Fol) Pathotyp 1	Resistencia a <i>Fusarium oxysporum</i> f.sp. <i>lactucae</i> (Fol) Raza 1		
	susceptible		sensible	anfällig	susceptible	Cobham Green, Patriot	1
	moderately resistant		modérément résistante	mäßig resistent	moderadamente resistente	Affic, Fuzila, Natexis	2
	highly resistant		hautement résistante	hochresistent	muy resistente	Costa Rica No. 4, Romasol	3

Proposed new wording

	English		français		deutsch		español		Example Varieties Exemples Beispielsorten Variedades ejemplo	Note/ Nota
50.	<u>QL</u>	<u>VG</u>	(+)							
	Resistance to <i>Bremia lactucae</i> (BI) Isolate BI: 31		Résistance à <i>Bremia lactucae</i> (BI) Isolat BI: 31		Resistenz gegen <i>Bremia lactucae</i> (BI) Isolat BI: 31		Resistencia a <i>Bremia lactucae</i> (BI) Aislado BI: 31			
	absent		absente		fehlend		ausente		Colorado, RYZ910457	1
	present		présente		vorhanden		presente		Argelès, Balesta	9
51.	<u>QL</u>	<u>VG</u>	(+)							
	Resistance to <i>Bremia lactucae</i> (BI) Isolate BI: 33EU		Résistance à <i>Bremia lactucae</i> (BI) Isolat BI: 33EU		Resistenz gegen <i>Bremia lactucae</i> (BI) Isolat BI: 33EU		Resistencia a <i>Bremia lactucae</i> (BI) Aislado BI: 33EU			
	<u>absent</u>		<u>absente</u>		<u>fehlend</u>		<u>ausente</u>		<u>Kibrille, RYZ2164</u>	<u>1</u>
	<u>present</u>		<u>présente</u>		<u>vorhanden</u>		<u>presente</u>		<u>RYZ910457</u>	<u>9</u>
52.	<u>QL</u>	<u>VG</u>	(+)							
	Resistance to <i>Bremia lactucae</i> (BI) Isolate BI: 35EU		Résistance à <i>Bremia lactucae</i> (BI) Isolat BI: 35EU		Resistenz gegen <i>Bremia lactucae</i> (BI) Isolat BI: 35EU		Resistencia a <i>Bremia lactucae</i> (BI) Aislado BI: 35EU			
	<u>absent</u>		<u>absente</u>		<u>fehlend</u>		<u>ausente</u>		<u>Design, Kibrille</u>	<u>1</u>
	<u>present</u>		<u>présente</u>		<u>vorhanden</u>		<u>presente</u>		<u>Bartoli</u>	<u>9</u>
54. 53.	<u>QL</u>	<u>VG</u>	(+)							
	Resistance to <i>Lettuce mosaic virus</i> (LMV) Pathotype II		Résistance au <i>Lettuce mosaic virus</i> (LMV) Pathotype II		Resistenz gegen <i>Lettuce mosaic virus</i> (LMV) Pathotyp II		Resistencia al <i>Lettuce mosaic virus</i> (LMV), Patotipo II			
	absent		absente		fehlend		ausente		Bijou, Hilde II, Sprinter, Sucrine	1
	present		présente		vorhanden		presente		Capitan, Corsica	9
52. 54.	<u>QL</u>	<u>MS/VG</u>	(+)							
	Resistance to <i>Nasonovia ribisnigri</i> (Nr) Biotype Nr: 0		Résistance à <i>Nasonovia ribisnigri</i> (Nr) Biotype Nr: 0		Resistenz gegen <i>Nasonovia ribisnigri</i> (Nr) Biotyp Nr: 0		Resistencia a <i>Nasonovia ribisnigri</i> (Nr) Biotipo Nº 0			
	absent		absente		fehlend		ausente		Abel, Green Towers, Nadine	1
	present		présente		vorhanden		presente		Barcelona, Bedford, Dynamite, Silvinas	9
53. 55.	<u>QN</u>	<u>MS/VG</u>	(+)							
	Resistance to <i>Fusarium oxysporum</i> f.sp. <i>lactucae</i> (Fol) Race 1		Résistance à <i>Fusarium oxysporum</i> f.sp. <i>lactucae</i> (Fol) Race 1		Resistenz gegen <i>Fusarium oxysporum</i> f.sp. <i>lactucae</i> (Fol) Pathotyp 1		Resistencia a <i>Fusarium oxysporum</i> f.sp. <i>lactucae</i> (Fol) Raza 1			
	susceptible		sensible		anfällig		susceptible		Cobham Green, Patriot	1
	moderately resistant		modérément résistante		mäßig resistent		moderadamente resistente		Affic, Fuzila, Natexis	2
	highly resistant		hautement résistante		hochresistent		muy resistente		Costa Rica No. 4, Romazol	3

Proposal to revise explanation Ad. 38 to 50 in Chapter 8.2 "Explanations for individual characteristics"*Current wording*

1. Pathogen	<i>Bremia lactucae</i>
2. Quarantine status	no
3. Host species	lettuce - <i>Lactuca sativa</i> L.
4. Source of inoculum	GEVES ¹ (FR) or Naktuinbouw ² (NL)
5. Isolate	BI: 16,17, 20-27, 29-31
6. Establishment isolate identity	test on differentials (see table below)
7. Establishment pathogenicity	test on susceptible varieties
8. Multiplication inoculum	
8.1 Multiplication medium	lettuce plantlets
8.2 Multiplication variety	susceptible variety, for example Green Towers. for higher isolates, a variety with defeated resistance may be preferable to keep the isolate fit.
8.3 Plant stage at inoculation	cotyledon to first leaf
8.4 Inoculation medium	tap water
8.5 Inoculation method	spraying a spore suspension
8.6 Harvest of inoculum	washing off from leaves
8.7 Check of harvested inoculum	counting spores
8.8 Shelf life/viability inoculum	2 hours at room temperature; 2 days in fridge
9. Format of the test	
9.1 Number of plants per genotype	at least 20
9.2 Number of replicates	-
9.3 Control varieties	(informative) differentials (see table below)
9.4 Test design	-
9.5 Test facility	climate room
9.6 Temperature	15°C-18°C
9.7 Light	adequate for good plant growth; seedlings should not etiolate. option: reduced light 24 hours after inoculation
9.8 Season	-
9.9 Special measures	plants may grow on wet blotting paper with or without a nutrient solution, on sand or on potting soil (see point 13). high humidity (>90%) is essential for infection and sporulation.
10. Inoculation	
10.1 Preparation inoculum	washing off from leaves by vigorous shaking in a closed container
10.2 Quantification inoculum	counting spores; spore density should be 3.10 ⁴ -1.10 ⁵
10.3 Plant stage at inoculation	cotyledon stage
10.4 Inoculation method	spraying till run-off. option: reduced light 24 hours after inoculation
10.5 First observation	beginning of sporulation on susceptible varieties (around 7 days after inoculation)
10.6 Second observation	3-4 days after first observation (around 10 days after inoculation)
10.7 Final observations	14 days after inoculation two of these three observations may be sufficient, the third notation is optional for observation of evolution of symptoms in case of doubt. the day of maximum sporulation should occur in this period.

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11. Observations

11.1 Method

visual observation of sporulation and necrotic reaction to infection resistant:

11.2 Observation scale

- 0 no sporulation, no necrosis
- 1 no sporulation, necrosis present
- 2 weak sporulation (much less than susceptible control) with necrosis
- 3 weak sporulation (less than susceptible control and not evolving between second and third observation) with necrosis
- 4 very sparse sporulation (not evolving between second and third observation) without necrosis

susceptible:

- 5 reduced sporulation (compared to susceptible control) without necrosis
- 6 normal sporulation without necrosis

11.3 Validation of test

on standards
in case of normal sporulation (same level as susceptible control) with necrosis another test on bigger plants or other substrate must be undertaken.

12. Interpretation of data in terms of class 0, 1, 2, 3 and 4: resistant

UPOV characteristic states

class 5 and 6: susceptible

13. Critical control points

reaction of standards (the infection pressure may vary between experiments, leading to slight differences in sporulation intensity); when the reactions are not clear the experiment should be repeated. the sowing on soil can be used to see necrosis, but weak sporulation (much less than susceptible control) can appear; when testing on sand, spores can be confused with grains of sand. in case of use of nutritive solution on blotting paper, a fungicide can be added to avoid contamination by saprophytes.

For reference: The International Bremia Evaluation Board (IBEB) produces regular updates of the host differential reaction table. The most recent table is available through ISF at <http://www.worldseed.org/our-work/plant-health/other-initiatives/ibeb/>. The table for isolates mentioned in this guideline and illustrations for the observation scale are given.

Isolates	Differentials	Green Towers	Dangle	R4T57D	UC Dm14	NunDm15	CGDm16	Colorado	FIRsal-1	Argelès	RY2 2164	RY29 10457	Bedford	Balesia	Bartoli	Design
BI: 16	+	+	+	-	-	+	-	-	-	-	-	-	-	-	-	-
BI: 17	+	+	-	+	+	-	+	+	-	-	-	(+)	-	-	-	-
BI: 20	+	+	+	-	-	+	+	-	-	-	-	-	-	-	-	-
BI: 21	+	+	+	-	+	+	-	+	-	-	-	-	-	-	-	-
BI: 22	+	-	+	+	+	-	+	-	-	-	-	-	+	-	-	-
BI: 23	+	+	+	-	-	+	-	-	+	-	-	-	-	-	-	-
BI: 24	+	-	+	-	-	+	+	-	+	-	-	-	-	-	-	(-)
BI: 25	+	-	+	-	-	+	+	+	-	-	-	-	-	-	-	-
BI: 26	+	+	+	-	-	+	+	+	+	-	-	-	-	-	-	-
BI: 27	+	+	+	+	+	-	+	-	+	+	-	(-)	+	-	-	-
BI: 29	+	-	+	+	+	+	+	+	+	+	-	-	-	-	-	-
BI: 30	+	-	+	+	+	-	+	-	+	+	-	-	-	-	-	+
BI: 31	+	+	+	+	-	-	+	-	-	+	+	-	-	-	-	+

Proposed new wording

Ad. 38 to 5052: Resistance to *Bremia lactucae* (Bl), several isolates

1.	Pathogen	<i>Bremia lactucae</i>
2.	Quarantine status	no
3.	Host species	lettuce - <i>Lactuca sativa</i> L.
4.	Source of inoculum	GEVES ³ (FR) or Naktuinbouw ⁴ (NL)
5.	Isolate	Bl: 16EU, 17EU, 20-27EU, 29-31EU, 33EU, 35EU
6.	Establishment isolate identity	test on differentials (see table below)
7.	Establishment pathogenicity	test on susceptible varieties
8.	Multiplication inoculum	
8.1	Multiplication medium	lettuce plantlets
8.2	Multiplication variety	susceptible variety, for example Green Towers. for higher isolates, a variety with defeated resistance may be preferable to keep the isolate fit.
8.3	Plant stage at inoculation	cotyledon to first leaf
8.4	Inoculation medium	tap water
8.5	Inoculation method	spraying a spore suspension
8.6	Harvest of inoculum	washing off from leaves
8.7	Check of harvested inoculum	counting spores
8.8	Shelflife/viability inoculum	2 hours at room temperature; 2 days in fridge
9.	Format of the test	
9.1	Number of plants per genotype	at least 20
9.2	Number of replicates	-
9.3	Control varieties	(informative) differentials (see table below)
9.4	Test design	-
9.5	Test facility	climate room
9.6	Temperature	15°C-18°C
9.7	Light	adequate for good plant growth; seedlings should not etiolate. option: reduced light 24 hours after inoculation
9.8	Season	-
9.9	Special measures	plants may grow on wet blotting paper with or without a nutrient solution, on sand or on potting soil (see point 13). high humidity (>90%) is essential for infection and sporulation.
10.	Inoculation	
10.1	Preparation inoculum	washing off from leaves by vigorous shaking in a closed container
10.2	Quantification inoculum	counting spores; spore density should be $3 \cdot 10^4$ - $1 \cdot 10^5$
10.3	Plant stage at inoculation	cotyledon stage
10.4	Inoculation method	spraying till run-off. option: reduced light 24 hours after inoculation
10.5	First observation	beginning of sporulation on susceptible varieties (around 7 days after inoculation)
10.6	Second observation	3-4 days after first observation (around 10 days after inoculation)
10.7	Final observations	14 days after inoculation two of these three observations may be sufficient, the third notation is optional for observation of evolution of symptoms in case of doubt. the day of maximum sporulation should occur in this period.

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11.	Observations	
11.1	Method	visual observation of sporulation and necrotic reaction to infection
11.2	Observation scale	<p>resistant:</p> <p>class 0 no sporulation, no necrosis</p> <p>class 1 no sporulation, necrosis present</p> <p>class 2 weak sporulation (much less than susceptible control) with necrosis</p> <p>class 3 weak sporulation (less than susceptible control and not evolving between second and third observation) with necrosis</p> <p>class 4 very sparse sporulation (not evolving between second and third observation) without necrosis</p> <p>susceptible:</p> <p>class 5 reduced sporulation (compared to susceptible control) without necrosis</p> <p>class 6 normal sporulation without necrosis</p>
11.3	Validation of test	<p>on standards</p> <p>in case of normal sporulation (same level as susceptible control) with necrosis another test on bigger plants or other substrate must be undertaken.</p>
12.	Interpretation of data in terms of UPOV characteristic states	<p>class 0, 1, 2, 3 and 4: resistant</p> <p>class 5 and 6: susceptible</p>
13.	Critical control points	<p>reaction of standards (the infection pressure may vary between experiments, leading to slight differences in sporulation intensity); when the reactions are not clear the experiment should be repeated.</p> <p>the sowing on soil can be used to see necrosis, but weak sporulation (much less than susceptible control) can appear; when testing on sand, spores can be confused with grains of sand.</p> <p>in case of use of nutritive solution on blotting paper, a fungicide can be added to avoid contamination by saprophytes.</p>

For reference: The International Bremia Evaluation Board (IBEB) produces regular updates of the host differential reaction table. The most recent table is available through ISF at <http://www.worldseed.org/our-work/plant-health/other-initiatives/ibeb/>. The table for isolates mentioned in this guideline and Also pictures illustrations for the observation scale are given.

Isolates	Differentials	GreenTowers	Dandie	R4T57D	UC Dm14	NunDm15	CGDm16	Colorado	FRrsal-1	Argelés	RYZ 2164	RYZ910457	Bedford	Balesta	Bartoli	Design	Kitbrille
BI: 16EU	+	+	+	-	-	+	-	-	-	-	-	-	-	-	-	-	-
BI: 17EU	+	+	-	+	+	-	+	+	-	-	-	(+)	-	-	-	-	-
BI: 20EU	+	+	+	-	-	+	+	-	-	-	-	-	-	-	-	-	-
BI: 21EU	+	+	+	-	+	+	-	+	-	-	-	-	-	-	-	-	-
BI: 22EU	+	-	+	+	+	-	+	-	-	-	-	-	+	-	-	-	-
BI: 23EU	+	+	+	-	-	+	-	-	+	-	-	-	-	-	-	-	-
BI: 24EU	+	-	+	-	-	+	+	-	+	-	-	-	-	-	-	(-)	-
BI: 25EU	+	-	+	-	-	+	+	+	-	-	-	-	-	-	-	-	-
BI: 26EU	+	+	+	-	-	+	+	+	+	-	-	-	-	-	-	-	-
BI: 27EU	+	+	+	+	+	-	+	-	+	+	-	(-)	+	-	-	-	-
BI: 29EU	+	-	+	+	+	+	+	+	+	+	-	-	-	-	-	-	-
BI: 30EU	+	-	+	+	+	-	+	-	+	+	-	-	-	-	+	-	-
BI: 31EU	+	+	+	+	-	-	+	-	-	+	+	-	-	-	+	-	-
BI: 33EU	+	-	+	+	+	+	+	+	+	+	-	-	-	-	+	+	+
BI: 35EU	+	-	+	+	+	+	+	+	+	+	+	-	-	-	+	+	+

Proposal to add “Resistance to Bremia lactucae (BI) Isolate BI: 33EU” and “Resistance to Bremia lactucae (BI) Isolate BI: 35EU” to Chapter TQ 7.3 “Other information”

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:
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#7. Additional information which may help in the examination of the variety

7.1 In addition to the information provided in sections 5 and 6, are there any additional characteristics which may help to distinguish the variety?

Yes [] No []

(If yes, please provide details)

7.2 Are there any special conditions for growing the variety or conducting the examination?

Yes [] No []

(If yes, please provide details)

7.3 Other information

Type (see 5.3 and 8.3 in the Test Guidelines for Lettuce (document TG/13/11) for explanations):

Type	Example varieties	
Butterhead type	Clarion, Maikönig, Sartre	[]
Novita type	Norvick	[]
Iceberg type	Great Lakes 659, Roxette, Saladin, Vanguard 75	[]
Batavia type	Aquarel, Curtis, Funnice, Felucca, Grand Rapids, Masaida, Visyon	[]
Frisée d'Amérique type	Bijou, Blonde à couper améliorée	[]
Lollo type	Lollo rossa, Revolution	[]
Oakleaf type	Catalogna, Kipling, Muraï, Salad Bowl	[]
Multi-divided type	Curletta, Duplex, Jadigon, Rodagio	[]
Frillice type	Frilett	[]
Cos type	Actarus, Blonde maraîchère, Pinokkio	[]
Gem type	Craquerelle du Midi, Sucrine, Xanadu	[]
Stem type	Celtuce, Guasihong	[]

Resistances:

[]

(50) Resistance to *Bremia lactucae* (BI) Isolate BI: 31
not tested 0 [] absent 1 [] present 9 []

(51) Resistance to *Bremia lactucae* (BI) Isolate BI: 33
not tested 0 [] absent 1 [] present 9 []

(52) Resistance to *Bremia lactucae* (BI) Isolate BI: 35
not tested 0 [] absent 1 [] present 9 []

~~(54)~~ (53) Resistance to *Lettuce mosaic virus* (LMV) Pathotype II
not tested 0 [] absent 1 [] present 9 []

~~(52)~~ (54) Resistance to *Nasonovia ribisnigri* (Nr) Biotype Nr: 0
not tested 0 [] absent 1 [] present 9 []

~~(53)~~ (55) Resistance to *Fusarium oxysporum* f. sp. *lactucae* (Fol) Race 1
not tested 0 [] susceptible 1 [] moderately resistant 2 [] highly resistant 3 []