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ENLARGED EDITORIAL COMMITTEE

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PARTIAL REVISION OF THE TEST GUIDELINES FOR CUCUMBER (DOCUMENT TG/61/7)

Document prepared by the Office of the Union

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- 1. At its forty-seventh session held in Nagasaki, Japan, from May 20 to 24, 2013, the Technical Working Party for Vegetables (TWV) considered the partial revision of the Test Guidelines for Cucumber on the basis of documents TG/61/7 (see document TWV/47/34 "Report", paragraph 72).
- 2. The structure of this document is as follows:

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3. The proposed revisions are presented in the Annex to this document.

[Annex follows]

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ANNEX

Proposal for a Revision of the Grouping Characteristics in Chapter 5.3

Current wording:

- (a) Cotyledon: bitterness (characteristic 1)
- (b) Plant: sex expression (characteristic 13)
- (c) Ovary: color of vestiture (characteristic 15)
- (c) Parthenocarpy (characteristic 16)
- (d) Fruit: length (characteristic 17)
- (e) Fruit: ground color of skin at market stage (characteristic 25)

Proposed new wording:

- (a) Cotyledon: bitterness (characteristic 1)
- (b) Plant: sex expression (characteristic 13)
- (c) Ovary: color of vestiture (characteristic 15)
- (c) Parthenocarpy (characteristic 16)
- (d) Fruit: length (characteristic 17)
- (e) Fruit: ground color of skin at market stage (characteristic 25)
- (f) Resistance to Cladosporium cucumerinum (Ccu) (characteristic 44)
- (g) Resistance to Cucumber mosaic virus (CMV) (characteristic 45)
- (h) Resistance to Powdery mildew (Podosphaera xanthii) (Px) (characteristic 46)
- (i) Resistance to Corynespora blight and target leaf spot (Corynespora cassiicola) (Cca) (characteristic 48)
- (j) Resistance to Cucumber vein yellowing virus (CVYV) (characteristic 49)

Proposal for a Revision of the Chapter 7: Table of Characteristics

Proposal to revise Characteristics 44 to 50

Current wording:

44. (+)	Resistance to Cladosporium cucumerinum (Ccu)	Résistance à Cladosporium cucumerinum (Ccu)	Resistenz gegen Cladosporium cucumerinum (Ccu)	Resistencia a la Cladosporium cucumerinum (Ccu)		
QL	absent	absente	fehlend	ausente	Pepinex 69	1
	present	présente	vorhanden	presente	Maketmore 76	9

Proposed new wording:

44. (+)	Resistance to Cladosporium cucumerinum (Ccu)	Résistance à Cladosporium cucumerinum (Ccu)	Resistenz gegen Cladosporium cucumerinum (Ccu)	Resistencia a la Cladosporium cucumerinum (Ccu)		
QL	absent	absente	fehlend	ausente	Cherubino, Frontera, Pepinex 69	1
	present	présente	vorhanden	presente	Corona, Marketmore 76, Sheila	9

Current wording:

highly resistant

45.	Resistance to Cucumis Mosaic Virus (CMV)	Résistance au virus de la mosaïque du	Gurkenmosaikvirus	Resistencia al virus del mosaico del pepino		
(+)		concombre	(CMV)	(CMV)		
QN	susceptible	sensibilité	anfällig	susceptible	Gele Tros	1
	moderately resistant	résistance moyenne	mäßig resistent	intermedia	Gardon	2
	highly resistant	forte résistance	hochresistent	alta	Hokus, Naf	3
	Proposed new wording:					
45. (+)	Resistance to Cucumber mosaic virus (CMV)	Résistance au virus de la mosaïque du concombre (CMV)	Resistenz gegen Gurkenmosaikvirus (CMV)	Resistencia al virus del mosaico del pepino (CMV)		
QN	susceptible	sensibilité	anfällig	susceptible	Bosporus, Corona, Ventura	1
	moderately resistant	résistance moyenne	mäßig resistent	intermedia	Capra, Gardon, Verdon	2
	highly resistant	forte résistance	hochresistent	alta	Naf, Picolino	3
46.	Current wording: Resistance to powdery	Rásistance à l'oïdium	Resistenz gegen	Resistencia al mildiú		
(+)	mildew (Podosphaera xanthii) (Sf)	(Podosphaera xanthii) (Sf)	Echten Mehltau (Podosphaera xanthii) (Sf)	blanco (<i>Podosphaera</i> xanthii) (Sf)		
QN	susceptible	sensibilité	anfällig	susceptible	Corona	1
	moderately resistant	résistance moyenne	mäßig resistent	intermedia	Flamingo	2
	highly resistant	forte résistance	hochresistent	alta	Cordoba	3
	Proposed new wording:					
10	Resistance to Powdery	Résistance à l'oïdium	Resistenz gegen	Resistencia al mildiú		
46.				hionoo / Dodoonhooro		
	mildew (Podosphaera xanthii) (Px)	(Podosphaera xanthii) (Px)	Echten Mehltau (Podosphaera xanthii) (Px)	blanco (<i>Podosphaera</i> xanthii) (Px)		
(+)	mildew (<i>Podosphaera</i>	•	(Podosphaera xanthii)		Corona, Ventura	1
46. (+) QN	mildew (<i>Podosphaera</i> <i>xanthii</i>) (Px)	(Px)	(Podosphaera xanthii) (Px)	xanthii) (Px)	Corona, Ventura Flamingo	1 2

hochresistent

alta

forte résistance

Aramon, Bella, Cordoba

3

Current wording:

present

présente

47.	Resistance to downy	Résistance au mildiou (Pseudoperonospora	Resistenz gegen Falschen Mehltau	Resistencia al mildiú velloso del pepino		
(+)	(Pseudoperonospora cubensis) (Pc)	cubensis) (Pc)	(Pseudoperonospora cubensis) (Pc)	(Pseudoperonospora cubensis (Pc))		
QN	susceptible	sensibilité	anfällig	susceptible	Pepinex 69, SMR 58	1
	moderately resistant	résistance moyenne	mäßig resistent	intermedia	Poinsett	2
	highly resistant	forte résistance	hochresistent	alta		3
	Proposed new wording:					
47. (+)	Resistance to Downy mildew (Pseudoperonospora	Résistance au mildiou (Pseudoperonospora cubensis) (Pcu)	Resistenz gegen Falschen Mehltau (Pseudoperonospora	Resistencia al mildiú velloso del pepino (Pseudoperonospora		
(-,	cubensis) (Pcu)		cubensis) (Pcu)	cubensis (Pcu)		
QL	absent	absente	fehlend	ausente	Pepinex 69, Wisconsin	1
	present	présente	vorhanden	presente	Poinsett 76	9
48. (+)	Resistance to Corynespora blight and target leaf spot (Corynespora cassiicola) (Cca)	Résistance à la pourriture corynespora et à la septoriose (<i>Corynespora</i> cassiicola) (Cca)	Resistenz gegen Corynespora- Blattfleckenkrank-heit (Corynespora cassiicola) (Cca)	Resistencia a la mancha foliar (Corynespora cassiicola) (Cca)		
QL	absent	absente	fehlend	ausente	Cerrucho, Goya, Pepinova	1
	present	présente	vorhanden	presente	Corona, Cumlaude, Edona	9
	Proposed new wording:					
48.	Resistance to Corynespora blight	Résistance à la pourriture corynespora	Resistenz gegen	Resistencia a la mancha foliar		
(+)	and target leaf spot (Corynespora cassiicola) (Cca)	et à la septoriose (Corynespora cassiicola) (Cca)	Blattfleckenkrankheit (Corynespora cassiicola) (Cca)	(Corynespora cassiicola) (Cca)		
QL	absent	absente	fehlend	ausente	Bodega	1
		_				

vorhanden

presente

Corona, Cumlaude

9

Current wording:

present

présente

49. (+)	Resistance to Cucumber Vein Yellowing Virus (CVYV)	Résistance au virus du jaunissement des nervures du concombre	Resistenz gegen Cucumber Vein Yellowing Virus (CVYV)	Resistencia al virus de las venas amarillas del pepino (CVYV)		
QL	absent	absente	fehlend	ausente	Corona	1
	present	présente	vorhanden	presente	Tornac	9
	Proposed new wording:					
49.	Resistance to	Résistance au virus du		Resistencia al virus de		
(+)	Cucumber vein yellowing virus (CVYV)	jaunissement des nervures du concombre (CVYV)	Cucumber vein yellowing virus (CVYV)	las venas amarillas del pepino (CVYV)		
QL	absent	absente	fehlend	ausente	Corinda, Corona, Ventura	1
	present	présente	vorhanden	presente	Dina, Summerstar, Tornac	9
	Current wording:					
50.	Resistance to Zucchini Yellow Mosaic Virus	Résistance au virus de la mosaïque jaune de	Resistenz gegen Zucchinigelb-	Resistencia al virus del mosaico amarillo del		
(+)	(ZYMV)	la courgette	mosaikvirus (ZYMV)	calabacín (ZYMV)		
QL	absent	absente	fehlend	ausente	Corona	1
	present	présente	vorhanden	presente	Dina	9
	Proposed new wording:					
50.	Resistance to Zucchini vellow mosaic virus	Résistance au virus de la mosaïque jaune de	Resistenz gegen Zucchinigelb-	Resistencia al virus del mosaico amarillo del		
(+)	(ZYMV)	la courgette (ZYMV)	mosaikvirus (ZYMV)	calabacín (ZYMV)		
(+)	(Z 1 W V)	ia coargette (ETIIIT)		· · · · · · · · · · · · · · · · · · ·		
QL	absent	absente	fehlend	ausente	Corona, Hilton, Ventura	1

vorhanden

presente

Dina, Summerstar, Thunder

Proposal for a Revision of the Chapter 8: Explanations on the Table of Characteristics

Proposal to Include a Revised Format for Disease Resistance Characteristics under section 8.2

(Current and Proposed New Wording are presented on opposite pages)

Current wording:

Ad. 44: Resistance to Cladosporium cucumerinum (Ccu)

Method

Maintenance of disease

Type of medium: PDA (Potato Dextrose Agar)
Special conditions: 7-8 days in the dark at 20°C

Remarks: The spore suspension should have a concentration of 0.5 x 10⁵

spores/ml. To be kept for a maximum of 4 days in a refrigerator

at 4°C.

<u>Preparation of inoculum</u>: Scrape off the fungus from the PDA medium, collect in a beaker

and filter through a cheese-cloth.

Raising the plants

Sowing: In potting soil or compost Temperature: 22/20°C (day/night)
Light: At least 16 hours
Number of plants: 30 plants per sample

Inoculation

Growth stage of plants: The plants should have a first leaf with a diameter of 3 cm.

Method of inoculation: Spray spore suspension on leaves

Special conditions after inoculation

Temperature: 22/20°C (day/night)
Light: At least 16 hours

Special conditions: Plastic cover placed over the plants. The plastic cover is closed

during the first three days and thereafter slightly opened during

the daytime.

Duration of test

From sowing to inoculation:From inoculation to last reading:6-8 days

Standard varieties: Resistance absent: Pepinex 69

Resistance present: Maketmore 76

Ad. 44: Resistance to Cladosporium cucumerinum (Ccu)

2. Quarantine status 3. Host species Cucumis sativus (cucumber or gherkin) 4. Source of inoculum Naktuinbouw (NL) 5. Isolate 6. Establishment isolate identity 7. Establishment pathogenicity 8.1 Multiplication inoculum 8.1 Multiplication medium 8.2 Multiplication medium 8.3 Plant stage at inoculation 8.4 Inoculation medium 8.5 Inoculation medium 8.5 Inoculation medium 8.6 Harvest of inoculum 8.6 Harvest of inoculum 8.7 Check of harvested inoculum 9. Format of the test 9. Number of plants per genotype 9.1 Number of plants per genotype 9.3 Control varieties 9.3 Centrol varieties 9.5 Test design 9.4 Test design 9.5 Test facility 9.5 Test facility 9.5 Test facility 9.6 Temperature 9.7 Light 9.8 Season 9.9 Special measures make sure soil is not dry at time of inoculation; plastic tent closed day and night during first three days after inoculation; thereafter slightly opened during daytime 10.1 Preparation inoculum 10.2 Quantification inoculum 10.3 Plant stage at inoculum 10.4 Inoculation 10.5 Pirist observation 10.7 Piripal observation 10.8 days post inoculation 10.9 Preparation inoculum 10.9 Preparation inoculum 10.1 Preparation inoculum 10.2 Plant stage at inoculation 10.4 Inoculation 10.5 Pirist observation 10.5 Pirist observation 10.5 Pirist observation 10.6 Second observation 10.7 Final observations 11.1 Method 11.2 Observations 11.1 Method 11.2 Observations 11.3 Piritation for test 11.3 Validation of test 11.4 Off-types 12. Interpretation of data in terms of UPOV characteristic states 12. Interpretation of data in terms of UPOV characteristic states 12. Interpretation of data in terms of UPOV characteristic states 12. Interpretation of data in terms of UPOV characteristic states 13. Critical control points 14. Experiment of the sexpectation and plant desting the plants of the plants	1. Pathogen	Cladosporium cucumerinum
4. Source of inoculum 5. Isolate 6. Establishment isolate identity 7. Establishment pathogenicity 8. Multiplication inoculum 8.1 Multiplication medium 8.2 Multiplication medium 8.3 Plant stage at inoculation 8.5 Inoculation medium 8.6 Harvest of inoculum 8.7 Ench of pathogenicity 8.8 Shefflire (visibility inoculum 8.9 Inoculation medium 8.1 Multiplication variety 8.2 Multiplication variety 8.3 Plant stage at inoculation 8.4 Inoculation medium 8.5 Inoculation medium 8.6 Harvest of inoculum 8.7 Enchek of harvested inoculum 8.8 Shefflire (visibility inoculum 9.8 Tornat of the test 9.1 Number of plants per genotype 9.2 Number of replicates 9.2 Number of replicates 10.3 Control varieties 11. Statistical (visibility inoculum 9.5 Test facility 9.6 Temperature 18 or 22/20°C day/night 19.7 Light 10. Inoculation 10. Inoculation 10. Preparation inoculum 10. Preparation	2. Quarantine status	no
4. Source of inoculum 5. Isolate 6. Establishment isolate identity 7. Establishment pathogenicity 8. Multiplication inoculum 8.1 Multiplication medium 8.2 Multiplication medium 8.3 Plant stage at inoculation 8.5 Inoculation medium 8.6 Harvest of inoculum 8.7 Enemperature 9. Format of the test 9.1 Number of plants per genotype 9.2 Number of replicates 9.3 Control varieties 9.3 Test facility 9.4 Test design 9.5 Test facility 9.6 Temperature 9.7 Light 9.7 Light 9.7 Special measures 9.8 Season 9.9 Special measures 10. Inoculation 10. Inoculation 10. Preparation inoculum 10. Preparation inoculum 10. Preparation inoculum 10. Oservations 11. Method 10. Format of data in terms of UPOV characteristic states 11. A Uff-types 11. Without symptoms on susceptible standard varieties 9. Inoculation on susceptible standard varieties 9. Potato Dextrose Agar (PDA) 9. Susceptible Search Sea	3. Host species	Cucumis sativus (cucumber or gherkin)
6. Establishment isolate identity 7. Establishment pathogenicity 8. Multiplication inoculum 8.1 Multiplication medium 8.2 Multiplication medium 8.3 Plant stage at inoculation 8.4 Inoculation medium 8.5 Inoculation medium 8.5 Inoculation medium 8.6 Harvest of inoculum 8.7 Check of harvested inoculum 9. Format of the test 9.1 Number of plants per genotype 9.2 Number of replicates 9.3 Control varieties 9.4 Test design 9.5 Test facility 9.6 Temperature 9.7 Eight at least 16 hours 9.9 Special measures 9.9 Special measures 10. Inoculation 10. Preparation inoculum 10. Prinal observations 11. Observations 11. Observations 11. Observations of test 11. Validation of test 11. Validation of test 11. Validation of test 11. Universe on standards 12. Interpretation of data in terms of UPOV Characteristic states		Naktuinbouw (NL)
6. Establishment isolate identity 7. Establishment pathogenicity 8. Multiplication inoculum 8.1 Multiplication medium 8.2 Multiplication medium 8.3 Plant stage at inoculation 8.4 Inoculation medium 8.5 Inoculation medium 8.5 Inoculation medium 8.6 Harvest of inoculum 8.7 Check of harvested inoculum 9. Format of the test 9.1 Number of plants per genotype 9.2 Number of replicates 9.3 Control varieties 9.4 Test design 9.5 Test facility 9.6 Temperature 9.7 Eight at least 16 hours 9.9 Special measures 9.9 Special measures 10. Inoculation 10. Preparation inoculum 10. Prinal observations 11. Observations 11. Observations 11. Observations of test 11. Validation of test 11. Validation of test 11. Validation of test 11. Universe on standards 12. Interpretation of data in terms of UPOV Characteristic states	5. Isolate	natural; to be taken from any source of infection in the field
8. Multiplication inoculum 8.1 Multiplication medium 8.2 Multiplication variety 8.3 Plant stage at inoculation 8.5 Horoulation medium 8.6 Harvest of inoculum 8.7 Check of harvested inoculum 8.8 Shelflife/viability inoculum 9. Format of the test 9.1 Number of plants per genotype 9.2 Number of replicates 9.3 Control varieties 9.3 Control varieties 9.5 Test facility 9.5 Test facility 9.6 Temperature 9.9 Special measures 9.9 Special measures 10. Inoculation 10. Preparation inoculum 10. 1 Preparation inoculum 10. 3 Plant stage at inoculation 10. 5 First observation 10. 5 First lobservation 10. 5 First lobservation 10. 5 First lobservation 10. 5 First of cate in cate in coulation 10. 1 Preparation inoculum 10. 5 First observation 10. 5 First observation 10. 5 First observation 10. 5 First of cate in c	6. Establishment isolate identity	
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8.2 Multiplication variety 8.3 Plant stage at inoculation 8.4 Inoculation medium 8.5 Inoculation method 8.6 Harvest of inoculum 8.7 Check of harvested inoculum 9. Format of the test 9.1 Number of plants per genotype 9.2 Number of replicates 9.3 Control varieties 10.3 Control varieties 10.4 Test design 9.5 Test facility 9.6 Temperature 9.7 Light 9.7 Light 9.8 Season 9.9 Special measures 10.1 Inoculation 10.1 Inoculation 10.1 Preparation inoculum 10.2 Quantification inoculum 10.3 Plant stage at inoculation 10.4 Preparation inoculum 10.5 First observation 10.5 First observation 10.6 Second observation 10.7 Final observations 11.4 Off-types 12. Interpretation of data in terms of UPOV characteristic states 10. Incurrent screeks of susceptible steries of susceptible plants 10. Incurrent of susceptible plants 11.4 Off-types 12. Interpretation over an approach of the test of the power of susceptible plants 12. Interpretation of data in terms of UPOV characteristic states	8. Multiplication inoculum	
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8.4 Inoculation medium 8.5 Inoculation method 8.6 Harvest of inoculum 8.6 Harvest of inoculum 8.8 Shelfille/viability inoculum 8.8 Shelfille/viability inoculum 9.6 Format of the test 9.1 Number of plants per genotype 9.2 Number of replicates 9.3 Control varieties 9.4 Test design 9.4 Test design 9.5 Test facility 9.6 Temperature 9.7 Special measures 9.9 Special measures 9.9 Special measures 10.1 Inoculation 10.1 Preparation inoculum 10.2 Quantification inoculum 10.3 Plant stage at inoculation 10.4 Inoculation method 10.5 First observation 10.6 Second observation 10.7 Final observations 11.1 Method 11.3 Validation of test 11.3 Validation of data in terms of UPOV characteristic stales 12. Interpretation inod at a fast of the proculation of the proper indication inoculon on standards 10.1 Preparation of data in terms of UPOV characteristic stales 12. Interpretation of data in terms of UPOV characteristic stales	8.2 Multiplication variety	
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8.6 Harvest of inoculum 8.7 Check of harvested inoculum 8.8 Shelflife/viability inoculum 9. Format of the test 9.1 Number of plants per genotype 9.2 Number of replicates 9.3 Control varieties Cherubino, Frontera, Pepinex 69 (susceptible) Corona, Marketmore 76, Sheila (resistant) 9.4 Test design 9.5 Test facility 9.5 Test facility 9.6 Temperature 9.7 Light 9.8 Season 9.9 Special measures 10. Inoculation 10. Inoculation 10.1 Preparation inoculum 10.2 Quantification inoculum 10.3 Plant stage at inoculation 10.4 Inoculation multiput stage at inoculation 10.5 First observation 10.7 Final observation 10.7 Final observations 11. Observations 11. Observations 11. Observation of data in terms of UPOV characteristic states 12. Interpretation of data in terms of UPOV characteristic states	8.4 Inoculation medium	sterile demineralized water
8.8 Shelflife/viability inoculum 9. Format of the test 9.1 Number of plants per genotype 9.2 Number of replicates 9.3 Control varieties 9.4 Test design 9.5 Test facility 9.5 Test facility 9.7 Light 9.8 Season 9.9 Special measures 9.9 Special measures 9.0 Inoculation 10.1 Preparation inoculum 10.2 Quantification inoculum 10.3 Plant stage at inoculation 10.3 Plant stage at inoculation 10.5 First observation 10.6 Second observations 11.1 Method 11.2 Observations 11.3 Validation of test 11.3 Validation of data in terms of UPOV characteristic states	8.5 Inoculation method	scrape the Petri dishes and spread over new plates
8.8 Shelflife/viability inoculum 9. Format of the test 9.1 Number of plants per genotype 9.2 Number of replicates 1 9.3 Control varieties Cherubino, Frontera, Pepinex 69 (susceptible) Corona, Marketmore 76, Sheila (resistant) 9.4 Test design 9.5 Test facility 9.5 Test facility 9.6 Temperature 9.7 Light 9.8 Season 9.9 Special measures 10.1 Inoculation 10.1 Preparation inoculum 10.2 Quantification inoculum 10.3 Plant stage at inoculation 10.4 First observation 10.5 First observation 10.6 Second observation 10.7 Final observations 11.1 Method 11.2 Observations 11.3 Validation of test 11.3 Validation of data in terms of UPOV characteristic states at least 20 9.4 dey and 4.9°C At least 20 9.2 Comma, Marketmore 76, Sheila (resistant) 1. Adays at least 20 9.2 Samples 69 (susceptible) Corona, Marketmore 76, Sheila (resistant) 1. Aleast 20 9.2 Samples 69 (susceptible) Corona, Marketmore 76, Sheila (resistant) 1. Aleast 20 9.3 Control varieties 69 (susceptible) Corona, Marketmore 76, Sheila (resistant) 1. Aleast 20 9.3 Control varieties 69 (susceptible) 1. Aleast 20 9.3 Control of 40 (susceptible) 1. Aleast 20 9.3 Control of 40 (susceptible) 1. Aleast 20 9.4 Test design 1. Aleast 20 9.3 Cantillon 41 (susceptible desistant) 1. Aleast 20	8.6 Harvest of inoculum	from 7-8 days old subcultures in the dark at 20°C
9. Format of the test 9.1 Number of plants per genotype 9.2 Number of replicates 1 9.3 Control varieties Cherubino, Frontera, Pepinex 69 (susceptible) Corona, Marketmore 76, Sheila (resistant) 9.4 Test design 9.5 Test facility 9.6 Temperature 9.7 Light 9.8 Season 9.9 Special measures make sure soil is not dry at time of inoculation; plastic tent closed day and night during first three days after inoculation; thereafter slightly opened during daytime 10. Inoculation 10.1 Preparation inoculum 10.2 Quantification inoculum 10.3 Plant stage at inoculation 10.4 Inoculation method 10.5 First observation 10.6 Second observation 10.7 Final observations 11.1 Method 11.2 Observations 11.3 Validation of test 11.3 Validation of data in terms of UPOV characteristic states 12. Interpretation of data in terms of UPOV characteristic states	8.7 Check of harvested inoculum	-
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9.2 Number of replicates 9.3 Control varieties Cherubino, Frontera, Pepinex 69 (susceptible) Corona, Marketmore 76, Sheila (resistant) 9.4 Test design e.g. after every 8 samples 16 resistant and 16 susceptible plants 9.5 Test facility - 9.6 Temperature 9.7 Light 9.8 Season - 9.9 Special measures make sure soil is not dry at time of inoculation; plastic tent closed day and night during first three days after inoculation; thereafter slightly opened during daytime 10. Inoculation 10.1 Preparation inoculum 0.5*10\$^5 -0.5*10\$^5 spores/mL 10.3 Plant stage at inoculation 10.3 Plant stage at inoculation 10.5 First observation 10.5 First observation 10.6 Second observation 10.7 Final observations 11. Observations 11. Method 11. Observations 11.1 Method 11.2 Observation scale [1] absent: Frontera [9] present: Corona Without symptoms, or with green lesions, or browning of the leaves 11.3 Validation of data in terms of UPOV characteristic states	9. Format of the test	
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12. Interpretation of data in terms of UPOV characteristic states		
UPOV characteristic states		
13. Critical control points temperature and humidity		
	13. Critical control points	temperature and humidity

Current wording:

Ad. 45: Resistance to Cucumis Mosaic Virus (CMV)

Method

Maintenance of disease

Type of medium: On susceptible living plants

Remarks: Greenhouse to be kept free from aphids

<u>Preparation of inoculum:</u> Mix freshly infected leaves with water. Prepare a solution with a

concentration of 1:15 (inoculum: water).

Raising the plants

Sowing: In potting soil or compost Temperature: 22/20°C (day/night)
Light: At least 16 hours
Number of plants: 30 plants per sample

Inoculation

Growth stage of plants: Fully developed cotyledons

Method of inoculation: Mechanical inoculation, by rubbing the cotyledons using

carborundum powder. Carborundum powder to be washed

away after inoculation.

Special conditions after inoculation

Temperature: 22/20°C (day/night)

Light: 16 hours

Duration of test

From sowing to inoculation:From inoculation to last reading:10-14 days

Scheme of observation:

1. Susceptible

II restricted growth, cotyledon slightly blistered,

leaves completely mottled

Gele Tros

III curled leaves, heavy mosaic symptoms over

whole leaf

2. Moderately resistant

IV curled leaves, slight mosaic symptoms Gardon

V slightly curled leaves, slight mosaic symptoms,

many necrotic spots

VI leaves not curled, vague mosaic symptoms,

few necrotic spots

3. Highly resistant

VII very few virus symptoms, very few necrotic

spots

VIII no symptoms Hokus, Naf

Ad. 45: Resistance to Cucumber mosaic virus (CMV)

1. Pathogen	Cucumber mosaic virus
2. Quarantine status	no
3. Host species	Cucumis sativus (cucumber or gherkin)
4. Source of inoculum	Naktuinbouw (NL), GEVES (FR)
5. Isolate	e.g. UK 6
6. Establishment isolate identity	resistant and susceptible controls or ELISA dipstick (Agdia)
7. Establishment pathogenicity	susceptible control inoculation
Multiplication inoculum	Susceptible control inoculation
8.1 Multiplication medium	on susceptible living plants
8.2 Multiplication variety	susceptible control
8.3 Plant stage at inoculation	cotyledons
8.4 Inoculation medium	ice-cold Phosphate Buffer Solution +carborundum+ active
0.4 moculation mediam	charcoal
8.5 Inoculation method	rubbing
8.6 Harvest of inoculum	fresh symptomatic leaf
8.7 Check of harvested inoculum	mock inoculation with PBS + carborundum
8.8 Shelflife/viability inoculum	8 hours at 4°C or on ice
9. Format of the test	o Hours at 4 o or office
9.1 Number of plants per genotype	at least 30
9.2 Number of replicates	3
9.3 Control varieties	Bosporus, Corona, Ventura (susceptible), Capra, Gardon,
3.5 Control varieties	Verdon (moderately resistant), Naf, Picolino (highly resistant)
9.4 Test design	e.g. replicates on different tablets in glasshouse
9.5 Test facility	glasshouse or climatic chamber
9.5 Test facility	giassilouse of climatic chamber
9.6 Temperature	18-25°C /15-20°C day/night or 22°C constant
9.7 Light	at least 16 hours
9.8 Season	best results in Apr/May; Sep/Oct
9.9 Special measures	keep glasshouse free of aphids
10. Inoculation	
10.1 Preparation inoculum	fresh leaf ground in cold PBS
10.2 Quantification inoculum	-
10.3 Plant stage at inoculation	Cotyledons, e.g.: 8 and 11 days after sowing
10.4 Inoculation method	rubbing, rinse carborundum off
10.5 First observation	7 days post inoculation
10.6 Second observation	14 days post inoculation
10.7 Final observations	21 days post inoculation, first and second leaf symptoms;
	only needed when second observation is not decisive
11. Observations	
11.1 Method	visual estimate of mosaic severity on 1st leaf
11.2 Observation scale	·
[1] susceptible: 3, Corona, Ventura	mosaic; clear border between yellow and green
[1] susceptible: 4, Bosporus	heavy mottle; confluent chlorosis
[2] moderately resistant: 5, Gardon,	light mottle; chlorotic islands
Verdon	
[2] moderately resistant: 6, Capra	some chlorotic stippling
[3] highly resistant: 7, Naf, Picolino	no symptoms
11.3 Validation of test	standards should conform to description; describe if different
	variation within standard should not exceed 1 scale point
11.4 Off-types	2 scale points difference with majority type,
	maximum 1 out of 6-35 plants
12. Interpretation of data in terms of	QN; [1] 3-4 susceptible, [2] 5-6 moderately resistant, [3] 7 highly
UPOV characteristic states	resistant

40.044 1	
13. Critical control points	1. Symptoms will develop from ring spot into mosaic (Ventura)
	or mottle (Gardon) or spots (Capra) Observation should focus
	on mature symptoms.
	, ,
	2. Aphids may transmit CMV as well as other viruses that may
	contaminate the CMV strain. Test should be in aphid-free
	compartment.
	3. Growth inhibition is usually not strong enough to measure in
	young plants; severe growth inhibition is more likely caused by
	genetic aberration than by virus infection.
	4. Leaf curling is not mentioned as a CMV symptom because
	leaf curling is usually caused by unbalanced growing
	conditions.
	5. Replicates are intended to control the main source of
	variation. For CMV this is usually the amount of sunlight.
	Therefore, replicate tablets should represent the different levels
	of shading within one greenhouse compartment.

Current wording:

Ad. 46: Resistance to powdery mildew (Podosphaera xanthii) (Sf)

Method

Maintenance of disease

Type of medium: On susceptible living plants

Preparation of inoculum: Wash the spores from the infected leaves and prepare a

suspension with a concentration of 10⁵ spores/ml. Filter the suspension through a cheese-cloth before infecting the plants.

Raising the plants

Sowing: In potting soil or compost Temperature: 22/20°C (day/night)
Light: At least 16 hours
Number of plants: 30 plants per sample

Inoculation

Growth stage of plants: Fully developed cotyledons

Method of inoculation: Spray spore suspension on leaves on the first, second and fifth

day after planting out.

Special conditions after inoculation

Temperature: 20/20°C (day/night)

Light: 16 hours

Duration of test

- From sowing to inoculation: 7, 8 and 11 days

- From inoculation to last reading: 12 days

Scheme of observation

1. <u>Susceptible</u>: hypocotyls and cotyledons infected, first leaf strongly infected, high sporulation.

2. <u>Moderately resistant</u>: hypocotyls not infected, cotyledons and first leaf moderately infected with moderate sporulation, moderate colonization.

3. <u>Highly resistant</u>: hypocotyls and cotyledons not infected, first leaf very weakly or not infected, few colonies, very weak sporulation.

Standard varieties: 1. Susceptible: Corona

2. Moderately resistant: Flamingo

3. Highly resistant: Cordoba

Ad. 46: Resistance to Powdery mildew (Podosphaera xanthii) (Px)

1. Pathogen 2. Quarantine status 3. Host species 4. Source of inoculum 5. Isolate 6. Establishment isolate identity 8. Multiplication inoculum 8.1 Multiplication variety 8.3 Plant stage at inoculation 8.4 Horculation method 8.5 Inoculation method 8.6 Harvest of inoculum 8.7 Check of harvested inoculum 8.8 Shelflife/viability inoculum 8.9 Format of the test 9.1 Number of plants per genotype 9.2 Number of replicates 9.7 Egt design 9.5 Test facility 9.7 Establishment isolate identity 9. Establishment pathogenicity 8. Susceptible standard varieties 9. Ventura) 8. Susceptible variety (e.g. Ventura) 8. Susceptible variety (e.g. Ventura) 8. Susceptible variety (e.g. Ventura) 8. Sinoculation method 8. Sinoculation wash spores off from sporulating leaves with demineralize water, option: add Tween20 at 5 µL (1 drop) /liter filter with cheese-cloth. 0,75 ml/pl 8.7 Check of harvested inoculum 9.8 Shelflife/viability inoculum 9.9 Format of the test 9.1 Number of replicates 1 9.3 Control varieties 1 9.4 Test design 9.5 Test facility 1 9.5 Test facility 1 9.6 Temperature 20°C constant 9.7 Light 16 hours 9.8 Season 9.9 Special measures 10. Inoculation 10.1 Preparation inoculum as above at 8.6
3. Host species 4. Source of inoculum 5. Isolate 6. Establishment isolate identity 7. Establishment pathogenicity 8. Multiplication inoculum 8.1 Multiplication wariety 8.2 Multiplication wariety 8.3 Plant stage at inoculation 8.4 Inoculation medium 8.5 Inoculation medium 8.6 Harvest of inoculum 8.6 Harvest of inoculum 8.7 Check of harvested inoculum 8.8 Shelflife/viability inoculum 8.8 Shelflife/viability inoculum 8.9 Format of the test 9.1 Number of plants per genotype 9.2 Number of replicates 1. Gorona, Ventura (susceptible), Flamingo (moderately resistant Aramon, Bella, Cordoba (highly resistant) 9.4 Test design 9.5 Test facility 9.6 Temperature 9.9 Special measures 10. Inoculation 1. Sexpective inactures of inoculus in natural; to be taken from any source of infection in the field natural or Naktuinboow (NLL) natural; to be taken from any source of infection in the field natural; to be taken from any source of infection in the field natural; to be taken from any source of infection in the field expected reactions on resistant standard varieties yeaperder expected varieties yeaperding varieties 15 minutes 15 minutes 9.1 Number of plants per genotype 16 at least 20 17 corona, Ventura (susceptible), Flamingo (moderately resistant) 9.4 Test design 19.5 Test facility 10.5 Test facility 10.5 Rounds (highly resistant) 10.5 Rounds (highly resistant) 10.5 Rounds (highly resistant) 10.5 Rounds (highly resistant)
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9.9 Special measures - 10. Inoculation
10. Inoculation
I TO THE TOWARD INCOMEDIAL INCOMEDIAL INCOME IN THE PROPERTY OF THE PROPERTY O
10.2 Quantification inoculum 1.10 ⁵ spores/ml
10.3 Plant stage at inoculation cotyledon at 1 st inoculation, first leaf at final inoculation
10.4 Inoculation method spraying, inoculation repeated on day 3, 5 and 6 after 1 st
10.5 First observation 10 days post inoculation
10.6 Second observation -
10.7 Final observations 14 days post inoculation
11. Observations
11.1 Method visual, comparative; mainly on first leaf
11.2 Observation scale sporulation on cotyledons and hypocotyls; heavy sporulation
first leaf
[1] susceptible: Corona, Ventura sporulation on cotyledons and hypocotyls; heavy sporulation
first leaf
[2] moderately resistant: Flamingo no sporulation on hypocotyls,
moderate sporulation on cotyledons and the first leaf;
[3] highly resistant: Aramon, Bella, symptoms on cotyledons are disregarded
Cordoba sometimes very light sporulation on first leaf
11.3 Validation of test on standard varieties
11.4 Off-types no more than 1 out of 6-35 plants
12. Interpretation of data in terms of QN [1] susceptible, [2] moderately resistant, [3] highly resistant
UPOV characteristic states
13. Critical control points Some types of moderate resistance may break down at high
temperatures.

Current wording:

Ad. 47: Resistance to downy mildew (Pseudoperonospora cubensis) (Pc)

Method

Maintenance of disease

Type of medium: On susceptible living plants

<u>Preparation of inoculum:</u> Wash the spores from the infected leaves with cold distilled

water and prepare a suspension. Suspension to be used

immediately.

Raising the plants

Sowing: In potting soil or compost
Temperature: 22/20°C (day/night)
Light: At least 16 hours
Number of plants: 30 plants per sample

Inoculation

Growth stage of plants: First two leaves fully developed Method of inoculation: Spray spore suspension on leaves.

Special conditions after inoculation

Temperature: 22/20°C (day/night)

Light: 16 hours

Relative humidity: 100%, 48 hours after inoculation

Special conditions: Plastic cover placed over the plants. The plastic cover is closed during

the first three days and thereafter slightly opened during the daytime.

Duration of test

From sowing to inoculation:
 From inoculation to last reading:
 ± 10 days

Scheme of observations:

Susceptible: Large lesions with abundant spore production, leaf tissue becoming

necrotic within 5 days.

Moderately resistant: Medium lesions, period of tissue yellowing prolonged to beyond 10

days.

Highly resistant: Small downy mildew lesions, round tissue in the center becoming

necrotic, no visual spore production.

Standard varieties: Susceptible: Pepinex 69, SMR 58

Moderately resistant: Poinsett

Highly resistant:

Ad. 47: Resistance to Downy mildew (Pseudoperonospora cubensis) (Pcu)

1. Pathogen	Downy mildew (Pseudoperonospora cubensis)
2. Quarantine status	no
3. Host species	Cucumis sativus (cucumber or gherkin)
4. Source of inoculum	natural
5. Isolate	natural; to be taken from any source of infection in the field
6. Establishment isolate identity	expected reactions on resistant standard varieties
,	Pepinex 69, Wisconsin (absent),
	Poinsett 76 (present)
7. Establishment pathogenicity	symptoms on susceptible standard varieties
8. Multiplication inoculum	
8.1 Multiplication medium	living plants
8.2 Multiplication variety	susceptible variety
8.3 Plant stage at inoculation	two leaves
8.4 Inoculation medium	cold distilled water
8.5 Inoculation method	spraying
8.6 Harvest of inoculum	by washing a sporulating leaf
8.7 Check of harvested inoculum	by counting the spores
8.8 Shelflife/viability inoculum	-
9. Format of the test	
9.1 Number of plants per genotype	at least 20
9.2 Number of replicates	1
9.3 Control varieties	Pepinex 69, Wisconsin (absent), Poinsett 76 (present)
9.4 Test design	-
9.5 Test facility	-
9.6 Temperature	22/20°C day/night
9.7 Light	at least 16 hours
9.8 Season	at least 10 flours
9.9 Special measures	Keep 100% humidity for 24 hours. A plastic cover is placed over the plants. After 24 hours, the plastic cover is slightly
	opened during daytime.
10. Inoculation	
10.1 Preparation inoculum	by washing sporulating leaves
10.2 Quantification inoculum	counting spores 10 ³ spores per ml
10.3 Plant stage at inoculation	first two leaves fully developed
10.4 Inoculation method	by spraying spore suspension on leaves
10.5 First observation	7 days post inoculation
10.6 Second observation	-
10.7 Final observations	10 days post inoculation
11. Observations	
11.1 Method	visual, comparative
11.2 Observation scale	
[1] absent: Pepinex 69, Wisconsin	large lesions with abundant sporulation, leaf tissue becoming
	necrotic within 5 days
[9] present: Poinsett76	small circular lesions, necrotic in the center, sporulation visible macroscopically no highly resistant standard is available
11.3 Validation of test	-
11.4 Off-types	-
12. Interpretation of data in terms of UPOV characteristic states	QL [1] absent, [9] present
13. Critical control points	
•	<u> </u>

Current wording:

Ad. 48: Resistance to Corynespora blight and target leaf spot (Corynespora cassiicola) (Cca)

Method

Maintenance of disease

Type of medium: PDA (Potato Dextrose Agar)
Special conditions: 12-14 days in the dark at 20°C

Remarks: The spore suspension should have a concentration of 0.5 x

10⁵ spores/ml. To be kept for a maximum of 4 days in a

refrigerator at 4°C

<u>Preparation of inoculum:</u> Scrape off the fungus from the nutrient medium, collect in a

beaker and filter through a cheese-cloth.

Raising the plants

Sowing: In potting soil or compost
Temperature: 22/20°C (day/night)
Light: At least 16 hours
Number of plants: 30 plants per sample

Inoculation

Growth stage of plants: The plants should have a first leaf with a diameter of 3 cm.

Method of inoculation: Spray spore suspension on leaves

Special conditions after inoculation

Temperature: 25/15°C (day/night) Light: At least 16 hours

Special conditions: Plastic cover placed over the plants. The plastic cover is

closed during the first three days and thereafter slightly

opened during the daytime.

Duration of test

From sowing to inoculation: 12-13 daysFrom inoculation to last reading: 8-10 days

Scheme of observation:

1. Susceptible

- a. cotyledons and first leaf dead, plant with greatly reduced growth
- b. cotyledons dead or strongly infected, first leaf weakly infected, plant with greatly reduced growth

2. Resistant

- a. cotyledons heavily infected, first leaf not infected, plant with normal growth
- b. cotyledons and first leaf not infected, plant with normal growth

Standard varieties:

Susceptible: Pepinova (1a) and Cerrucho, Goya (1b) Resistant: Cumlaude, Edona (2a) and Corona (2b)

Ad. 48: Resistance to Corynespora blight and target leaf spot (Corynespora cassiicola) (Cca)

1. Pathogen	Corynespora cassiicola (Target leaf spot)
2. Quarantine status	no
3. Host species	Cucumis sativus (cucumber or gherkin)
4. Source of inoculum	Naktuinbouw (NL)
5. Isolate	all sources of inoculums are equal
6. Establishment isolate identity	expected reactions on resistant standard varieties
7. Establishment pathogenicity	symptoms on susceptible standard varieties
8. Multiplication inoculum	
8.1 Multiplication medium	PDA at 20°C in darkness
8.2 Multiplication variety	-
8.3 Plant stage at inoculation	_
8.4 Inoculation medium	demineralized water
8.5 Inoculation method	scraping the Petri dishes and spread over new plates
8.6 Harvest of inoculum	from 12-14 days old subcultures
8.7 Check of harvested inoculum	-
8.8 Shelflife/viability inoculum	max. 4 days at 4°C
9. Format of the test	max. 4 days at 4 0
9.1 Number of plants per genotype	at least 20
9.2 Number of replicates	1
9.3 Control varieties	Bodega, Pepinova (absent), Corona, Cumlaude (present)
9.4 Test design	- Bouega, Fepinova (absent), Corona, Cumadue (present)
9.5 Test facility	-
9.6 Temperature	25/15°C downight or 22°C downight in alimatic chamber
	25/15°C day/night or 23°C day/night in climatic chamber at least 16 hours
9.7 Light	
9.8 Season	best results obtained in February-April due to temperature
9.9 Special measures	make sure soil is not dry at time of inoculation; plastic tent
	closed day and night 3 days post inoculation, closed only in
10. Inoculation	night >3 days post inoculation
	filter through chanceleth, add 0.010/ Tween to energ
10.1 Preparation inoculum	filter through cheesecloth; add 0,01% Tween to spore
40.2 Overtification in a culum	suspension
10.2 Quantification inoculum	0,5x10 ⁵ spores/ml
10.3 Plant stage at inoculation	diameter first true leaf around 3 cm
10.4 Inoculation method	transplant on day 7, then inoculate on day 12
	spraying spore suspension
10.5 First observation	8 days post inoculation
10.6 Second observation	- 0.44 days past inscribation
10.7 Final observations	8-11 days post inoculation
11. Observations	visual, seementii see
11.1 Method	visual; comparative; mainly on cotyledon and first leaf
11.2 Observation scale	actual de la decidificat la constant de la constant
[1] highly susceptible: 1, Bodega	cotyledons dead, first leaves dead, growth retardation
[1] susceptible: 2, Pepinova	cotyledons dead or covered with lesions, first leaves with lesions, growth retardation
[9] resistant: 3, Cumlaude	cotyledons with a few lesions, first leaf with no or sometimes a few lesions
[9] highly resistant: 4, Corona	cotyledons without lesions; first leaf without lesions
11.3 Validation of test	standards should conform to description; describe if different
11.4 Off-types	maximum 1 out of 6-35 plants
12. Interpretation of data in terms of	QL [1] 1-2 absent, [9] 3-4 present
UPOV characteristic states	
13. Critical control points	-

Current wording:

Ad. 49: Resistance to Cucumber Vein Yellowing Virus (CVYV)

Method

Maintenance of isolate

Type of medium: On susceptible living plants

Special conditions: Fresh inoculum, or inoculum which has been stored for a maximum

of 3 months at -20°C

Execution of test

Growth stage of plants: Appearance of first leaf

Temperature: 16 to 30°C Light: 16 hours Growing method: Greenhouse

Method of inoculation: Mechanical, by rubbing of cotyledons
Duration of test: From inoculation to reading: 14 days

Number of plants tested: At least 15 plants
Standard varieties: Susceptible: Corona
Resistant: Tornac

Remark: Resistant varieties may have a slight discoloration of the veins of

older leaves

Ad. 49: Resistance to Cucumber vein yellowing virus (CVYV)

1. Pathogen	Cucumber vein yellowing virus		
2. Quarantine status	no		
3. Host species	Cucumis sativus (cucumber or gherkin)		
4. Source of inoculum	Naktuinbouw (NL)		
5. Isolate	e.g. KB18		
6. Establishment isolate identity	resistant and susceptible controls		
7. Establishment pathogenicity	susceptible control inoculation		
8. Multiplication inoculum			
8.1 Multiplication medium	leaf		
8.2 Multiplication variety	susceptible variety (e.g. Corinda)		
8.3 Plant stage at inoculation	cotyledons / appearance of first leaf		
8.4 Inoculation medium	leaf in ice-cold PBS + carborundum		
8.5 Inoculation method	rubbing		
8.6 Harvest of inoculum	freeze-dried leaf		
8.7 Check of harvested inoculum	-		
8.8 Shelflife/viability inoculum	8 hours at 4°C or on ice		
9. Format of the test	o flours at 4 G of office		
9.1 Number of plants per genotype	at least 30		
9.2 Number of replicates	1		
9.3 Control varieties			
9.3 Control varieties	Corinda, Corona, Ventura (susceptible), Dina, Summerstar, Tornac (resistant)		
0.4 Toot design	TOTTIAC (Tesistatit)		
9.4 Test design	- araanhayaa		
9.5 Test facility	greenhouse		
9.6 Temperature	16-30°C		
9.7 Light	at least 16 hours		
9.8 Season	best results in Apr/May; Sep/Oct		
9.9 Special measures	12.000 lux suggested; keep glasshouse free of aphids		
10. Inoculation			
10.1 Preparation inoculum	fresh leaf ground in 0.03 M phosphate buffer + carborundum + active coal		
10.2 Quantification inoculum	-		
10.3 Plant stage at inoculation	cotyledons		
10.4 Inoculation method	rubbing, option: rinse carborundum off to prevent leaf damage		
10.5 First observation	7 days post inoculation; cotyledon symptoms		
10.6 Second observation	14 days post inoculation; first leaf symptoms		
10.7 Final observations	21 days post inoculation, first and second leaf symptoms		
11. Observations			
11.1 Method	visual; comparative; mainly on first leaf		
11.2 Observation scale			
[1] susceptible: 3, Corinda, Corona	mosaic; clear border between yellow and green		
[1] susceptible: 4, Ventura	heavy mottle; confluent chlorosis		
[9] resistant: 5, Dina	light mottle; chlorotic islands		
[9] resistant: 6, Summerstar	some chlorotic stippling		
[9] resistant: 7, Tornac	no symptoms		
11.3 Validation of test	Standards should conform to description; describe if different.		
1.1.5 Validation of toot	Variation within standard should not exceed 1 scale point		
11.4 Off-types	maximum 1 out of 6-35 plants		
12. Interpretation of data in terms of	QL; [1] 3-4 absent, [9] 5-7 present		
UPOV characteristic states	αL, [1] 5-4 αυβοτι, [2] 5-7 ριοβοτιί		
13. Critical control points	Resistant varieties may have a slight discoloration of the veins		
10. Offical control politics	of older leaves.		
	oi oldoi idaves.		

Current wording:

Ad. 50: Resistance to Zucchini Yellow Mosaic Virus (ZYMV)

Method

Maintenance of isolate

Type of medium: On susceptible living plants

Special conditions: Fresh inoculum, or inoculum which has been stored for a

maximum of 6 months at - 20°C

Execution of test

Growth stage of plants: Appearance of first leaf Temperature: 23 to 25°C day and night

Light: 16 hours
Growing method: Greenhouse

Method of inoculation: Mechanical, by rubbing of cotyledons
Duration of test: From inoculation to reading: 14 days

Number of plants tested:
Standard varieties:
At least 15 plants
Susceptible: Corona
Resistant: Dina

Remark: Resistant varieties may have a slight discoloration of the

veins of older leaves.

Susceptible varieties have systemic mosaic symptoms.

Ad. 50: Resistance to Zucchini yellow mosaic virus (ZYMV)

1. Pathogen	Zucchini yellow mosaic virus	
2. Quarantine status	no	
3. Host species	Cucumis sativus (cucumber or gherkin)	
4. Source of inoculum	Naktuinbouw (NL)	
5. Isolate	e.g. CU61	
6. Establishment isolate identity	resistant and susceptible controls;	
7. Establishment pathogenicity	susceptible control inoculation	
8. Multiplication inoculum		
8.1 Multiplication medium	leaf	
8.2 Multiplication variety	susceptible control	
8.3 Plant stage at inoculation	cotyledons / appearance of first leaf	
8.4 Inoculation medium	ice-cold PBS + carborundum	
8.5 Inoculation method	rubbing	
8.6 Harvest of inoculum	fresh or dried leaf	
8.7 Check of harvested inoculum	110011011011011	
8.8 Shelflife/viability inoculum	8 hours at 4°C or on ice	
9. Format of the test	0 1104110 44 1 1 0 41 101	
9.1 Number of plants per genotype	at least 30	
9.2 Number of replicates	1	
9.3 Control varieties	Corona, Hilton, Ventura (susceptible), Dina, Summerstar,	
o.o control various	Thunder (resistant)	
9.4 Test design	-	
9.5 Test facility	greenhouse or climatic chamber	
9.6 Temperature	18-25°C /15-25°C day/night	
9.7 Light	at least 16 hours	
9.8 Season	best results in Apr/May; Sep/Oct	
9.9 Special measures	12.000 lux suggested; keep glasshouse free of aphids	
10. Inoculation	12.000 tax daggested, keep glassificade files of aprillas	
10.1 Preparation inoculum	fresh leaf ground in cold PBS	
10.2 Quantification inoculum	- Treat ground in cold i bo	
10.3 Plant stage at inoculation	cotyledons / appearance of first leaf -(e.g. 8 days; repeat 3 days	
Total Flame stage at integration	later)	
10.4 Inoculation method	rubbing, rinse carborundum off	
10.5 First observation	7 - 14 days post inoculation; cotyledon symptoms	
10.6 Second observation	14 - 21 days post inoculation; first leaf symptoms	
10.7 Final observations	21 days post inoculation, first and second leaf symptoms	
11. Observations		
11.1 Method	visual; comparative, mainly on first leaf	
11.2 Observation scale	Trouble, Sometiment, manny on motion	
[1] absent: 4, Corona, Ventura	mosaic; leaf deformation	
[1] absent: 5, Hilton	mosaic; weak leaf deformation	
[9] present: 6, Thunder	weak mottle	
[9] present: 7, Dina, Summerstar	vein necrosis	
11.3 Validation of test	Standards should conform to description; describe if different.	
validation of toot	Variation within standard should not exceed 1 scale point	
11.4 Off-types	2 scale points difference with most present type, maximum 1 out	
5 3,500	of 30 plants	
12. Interpretation of data in terms of	QL: [1] 4-5 absent, [9] 6-7 present	
UPOV characteristic states		
13. Critical control points	Resistant varieties may have a slight discoloration of the veins	
	of older leaves. Susceptible varieties have systemic mosaic	
	symptoms.	

<u>Proposal for a Revision of the Chapter 10 "Technical Questionnaire"</u> Section 5: TQ characteristics selected from the Table of Characteristics

To add an option "Not tested" to characteristics 44, 45, 46, 48, 49 to Section 5:

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
	[]		
5.9 (44)	Resistance to Cladosporium cucumerinum (Ccu)		
	absent	Cherubino, Frontera, Pepinex 69	1[]
	present	Corona, Marketmore 76, Sheila	9[]
	not tested		
5.10 (45)	Resistance to Cucumber mosaic virus (CMV)		
	susceptible	Bosporus, Corona, Ventura	1[
	moderately resistant	Capra, Gardon, Verdon	2[
	highly resistant	Naf, Picolino	3[
	not tested		[]
5.11 (46)	Resistance to Powdery mildew (Podosphaera xanthii) (Px)		
	susceptible	Corona, Ventura	1[
	moderately resistant	Flamingo	2[
	highly resistant	Aramon, Bella, Cordoba	3[
	not tested		[]
5.12 (48)	Resistance to Corynespora blight and target leaf pot (Corynespora cassiicola) (Cca)		
	absent	Bodega	1 [
	present	Corona, Cumlaude	9 [
	not tested		[]
5.13 (49)	Resistance to Cucumber vein yellowing virus (CVYV)		
	absent	Corinda, Corona, Ventura	1 [
	present	Dina, Summerstar, Tornac	9 [
	not tested		

Section 7: Addition of new characteristics under 7.3.1

To add the following to Section 7 "Additional information which may help in the examination of the variety":

7.3.1 Resistance to pests and diseases (please specify races/strains if possible)

		absent	present	not tested
(a)	Resistance to Downy mildew (Pseudoperonospora cubensis) (Pcu) (char. 47)			[]
(b)	Resistance to Zucchini yellow mosaic virus (ZYMV) (char. 50)		[]	

[End of Annex and of document]