Technical Working Party for Vegetables

TWV/56/8

Fifty-Sixth Session Virtual meeting, April 18 to 22, 2022 Original: English

Date: March 8, 2022

MATTERS TO BE RESOLVED CONCERNING TEST GUIDELINES PUT FORWARD FOR ADOPTION BY THE TECHNICAL COMMITTEE: TOMATO ROOTSTOCKS

Document prepared by an expert from the Netherlands

Disclaimer: this document does not represent UPOV policies or guidance

- 1. The Enlarged Editorial Committee (TC-EDC), at its meeting held in Geneva, October 25 to 26, 2021, considered a proposal for a partial revision of the Test Guidelines for Tomato Rootstocks (document TC/57/18). The TC-EDC agreed that the technical issues raised on the proposed partial revision should be addressed by the TWV (see document TC/57/25 "Report", Annex II).
- 2. The following table presents comments made by the TC-EDC on the proposed partial revision of the Test Guidelines for Tomato Rootstocks (document TC/57/18). The technical issues to be addressed by the TWV are indicated with "#". The proposed responses from the Leading Expert, Ms. Cécile Marchenay (Netherlands), are presented under each comment from the TC-EDC.

	T		
#Char. 22,	to check whether to reduce the scale to 3 notes or to improve the explanation about		
Ad. 22	scoring the characteristic using all notes on the scale of 5 notes.		
	Leading Expert: Scale 1 to 5 has been kept for the moment, including extra explanation		
	about all notes.		
#Ad. 22, 9.1,	to improve the explanation clarifying how would germination effect the scoring of the		
9.4, 11.3	characteristic		
	Leading Expert: see Annex to this document		
Ad. 22, 9.1	to read " due to nematode-or not"		
	Leading expert: see Annex to this document (covered by comment above)		
Ad. 22, 9.2	to read "at least 2, preferably 3 to allow statistical analysis"		
	Leading Expert: prefer to keep "to allow statistical analysis"		
Ad. 22, 9.6	to read "20-26°C, the temperature may should be"		
	Leading Expert: agreed		
Ad. 22, 10.2	to read "the ratio is depending of Quantity of inoculum depends on aggressiveness of test		
	and lab's growing conditions (e.g. between 30 g to 60 g of infested roots, for 100 plants in		
	a tray of 45*30 cm containing approximately 5.5 kg of substrate);, galls should be		
	homogeneously mixed with soil."		
	Leading Expert: agreed		
Ad. 22, 10.4	to read " plants seed sown in soil contaminated with galls."		
	Leading Expert: agreed		
Ad. 22, 11.4	to be deleted		
	Leading Expert: agreed		
Ad. 22, 12.	in the figure, blue text: "Tyonoc" should read "Tyonic"		
	Leading Expert: figure removed, not applicable		
Ad. 24, 12.	- to add the following wording:		
	"Absent [1] distribution of plants in the classes comparable with the susceptible controls.		
	"Present [9] distribution of plants in the classes comparable with the resistant controls."		
	Leading Expert: agreed		

3. The Annex to this document a new proposal for the explanation Ad. 22, based on the information above.

[Annex follows]

ANNEX

Proposed changes to the explanation Ad. 22 "Resistance to Meloidogyne incognita (Mi)"

Ad. 22: Resistance to Meloidogyne incognita (Mi)

Pathogen Quarantine status Host species	Meloidogyne incognita -
	<u> </u>
	Tomato - Solanum lycopersicum
Source of inoculum	GEVES ¹ (FR) or INIA (ES) ² or Naktuinbouw (NL ³)
Isolate	non-resistance breaking
Establishment isolate identity	use tomato standards
	use susceptible rootstock or tomato standard
	doe dadeephble recision of terrate standard
	living plant
	susceptible variety, preferably resistant to powdery mildew
	see 10.3 2nd leaf stage
	see 10.4
inoculation method	deposit of piece of contaminated roots in soil (around 5-10g
	near each plant, to adapt depending on the population
	aggressivity)
Harvest of inoculum	6 to 10 weeks after inoculation, root systems are cut with
Trainest of inocularit	scissors into pieces of about 1 cm length
Check of harvested inoculum	visual check for presence of root knots and ripe egg masses
	1 day
	I day
	20 plants 30 plants
Number of plants per genotype	Remark: knowing that germination in rootstocks might be
	low and/or irregular it is recommended to sow more seeds
	to be sure to get at least 30 plants.
Number of replicates	1-replicate
Trainber of replicates	at least 2, preferably 3 to allow statistical analysis
Control varieties	Susceptible: Bruce and (Solanum lycopersicum) Clairvil,
Control various	Casaque Rouge
	Moderately Intermediate resistant: (Solanum lycopersicum)
	Madyta, Campeon, Madyta, Vinchy, Tyonic
	Highly resistant: Emperador and (Solanum lycopersicum)
	"Anahu x Casaque Rouge", Anahu, Anabel
Test design	include standard varieties
	3 replicates of 10 plants in different trays by variety, non-
	inoculated plants in a separate tray
Test facility	greenhouse or climate room
	not over 28° C
	20-26°C, the temperature should be adapted, depending on
	the aggressiveness of the test, to obtain the expected
	response of the controls, but should not exceed 26°C.
	Higher temperatures will cause breakdown of resistance.
Light	at least 12 h per day
	small pieces of diseased roots mixed with soil
	mix soil and infested root pieces
Quantification inoculum	soil: root ratio = 8:1, or depending on experience
	Quantity of inoculum depends on aggressivity of test and
	growing conditions (e.g. between 30g to 60g of infested
	roots for 100 plants in a tray of 45*30 cm containing
	approximately 5.5 kg of substrate); galls should be
	homogeneously mixed with soil.
	HOHIOGEHEOUSIV IIIIAEG WIGH SOII.
	Establishment pathogenicity Multiplication inoculum Multiplication wariety Plant stage at inoculation Inoculation method Harvest of inoculum Check of harvested inoculum Shelf life/viability inoculum Format of the test Number of plants per genotype Number of replicates Control varieties Test design Test facility Temperature Light Inoculation Preparation inoculum

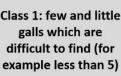
¹ GEVES; <u>matref@geves.fr</u>

² INIA; <u>resistencias@inia.es</u> ³ Naktuinbouw; <u>resistentie@naktuinbouw.nl</u>

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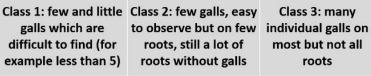
10.4	Inoculation method	plants are sown in infested soil or contamination of soil after sowing when plantlets are at cotyledon stage
		Plants are sown in non-contaminated soil and
		contamination of soil is done after sowing when plantlets
		are at cotyledon stage.
10.7	End of test	28 to 45 days after inoculation depending on test conditions
		(temperature, season)
11.	Observations	
11.1	Method	root inspection per plant
11.2	Observation scale	

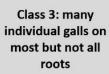


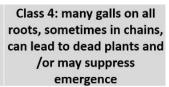


intermediate

present (highly resistant)...... [3]















11.3	Validation of test	evaluation of variety resistance should be calibrated with results of resistant and susceptible controls on standards Validation on controls. Expected reactions of controls: Susceptible control: most plants at classes 3 and 4. Highly resistant: most plants at classes 0 and 1. Intermediate resistant: clearly different from other controls
11.4	Off-types	with majority of plants around class 2. resistant varieties may have a few plants with a few galls
12.	Interpretation of test results in comparison with control varieties data in terms of UPOV characteristic states	[1] Susceptible: distribution of plants in the classes comparable with the susceptible controls. [2] Susceptible to intermediate resistant: distribution of plants in the classes between susceptible controls and intermediate resistant controls (significantly different from both). [3] Intermediate resistant: distribution of plants in the classes comparable with the intermediate resistant controls. [4] Intermediate resistant to highly resistant: distribution of plants in the classes between intermediate resistant controls and highly resistant controls (significantly different from both). [5] Highly resistant: distribution of plants in the classes comparable with the highly resistant controls. If results are not clear, statistical analysis is advised.
	To consider that resistant varieties ma off-types.	ay have a few plants with falls. These are not considered as
	•	.[1] growth strongly reduced, high gall count

(moderately resistant)...... [2] medium growth reduction, medium gall count

no growth reduction, no galls

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13.	B. Critical control points	Avoid rotting of roots; high temperature causes breakdown of resistance
		Avoid overwatering. This may result in rotting of roots.
		In case of aggressive test, decrease the quantity of
		inoculum.

[End of Annex and of document]