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| International Union for the Protection of New Varieties of Plants |  |

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Matters to be resolved concerning Test Guidelines adopted by the Technical Committee: Partial revision of the Test Guidelines for TOMATO

Document prepared by an expert from the Netherlands

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The Enlarged Editorial Committee (TC-EDC), at its meeting held in Geneva, from March 26 to 27, 2018, considered a proposal for a partial revision of the Test Guidelines for Tomato (*Solanum lycopersicum*L*.*) (see document [TC-EDC/MAR18/8](http://upov.int/meetings/en/doc_details.jsp?meeting_id=46070&doc_id=401237)) and agreed that the technical issues raised on the proposed partial revision of the Test Guidelines for Tomato should be addressed by the TWV (see document TC‑ECD/MAR18/11 “Report”, paragraph 57).

The following table presents all the comments made by the TC-EDC on the proposed partial revision of the Test Guidelines for Tomato (document TC-EDC/MAR18/8), including the technical issues, with the proposed responses by the Leading Expert, Ms. Amanda van Dijk (Netherlands).

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| General remark | | Control varieties in the DNA-test should also be indicated in the bio-test.  Why are the control varieties not used as example varieties?  *Leading Expert: The proposal can be improved by having the same set of varieties in DNA-test, bio-test and as example varieties. See Ad. 48 (ii) 4.2, Ad. 51 (ii) 4.2 and Ad. 58 (ii) 4.2.* |
| Chars. 48, 51, 58 | | - to be kept as VG (VS not appropriate for DNA marker test, see TGP/9. In case of DNA markers, 20 plants are observed for uniformity. According to chapter 4.1.4 of TG/44/11 Rev., indication of VS is not appropriate.)  - DNA marker test to be presented to the BMT to check whether method corresponds to TGP/15  *Leading Expert: I will participate in the BMT and the item will be discussed. I will report to the TWV accordingly* |
| Ad. 48  Ad. 51  Ad. 58 | | to check whether to read “Resistance to race 0 (ex 1) and race 1 (ex 2) to be tested in a bio-assay (method i) or in a DNA marker test (method ii), if appropriate. Resistance to race 2 (ex 3) to be tested in a bio-assay (method i).” (to clarify whether it should be bio-essay only OR bio-essay in conjunction with DNA marker test where required. The gene-specific marker model anticipates a presence of a reliable link between presence of the marker and expression of the characteristic.)  *Leading Expert:*  *Ad. 48*  *To read “Resistance to race 0 (ex 1) and race 1 (ex 2) to be tested in a bio-assay (method i) or in a DNA marker test (method ii), if appropriate. Resistance to race 2 (ex 3) to be tested in a bio-assay (method i).”*  *Explanation:*   * *A bio-assay is always accepted.* * *A DNA-marker test is always accepted for race 1 (ex 2). If the DNA marker test result shows presence of the susceptibility allele, no conclusion can be made for race 0 (ex 1).*   *At Ad. 48 (ii) 8. is explained that a DNA marker test must confirm the declaration in the TQ, if not, a bio-assay should be performed.*  *Ad. 51*  *To read “Resistance to strain 0, 1 and 2 to be tested in a bio-assay (method i) or in a DNA marker test (method ii), if appropriate.”*  *Explanation: both a bio-assay and a DNA-marker test are always accepted. At Ad. 51 (ii) 8. is explained that a DNA marker test must confirm the declaration in the TQ, if not, a bio-assay should be performed.*  *Ad. 58*  *To read “Resistance to strain 0 to be tested in a bio-assay (method i) or in a DNA marker test (method ii), if appropriate.”*  *Explanation: both a bio-assay and a DNA-marker test are always accepted. At Ad. 58 (ii) 8. is explained that a DNA marker test must confirm the declaration in the TQ, if not, a bio-assay should be performed.* |
| Ad. 48 (ii)  Ad. 51 (ii)  Ad. 58 (ii) | | - to clarify “often” (does not meet requirements for use of gene-specific marker model)  (e.g. in Ad. 48 (ii) to confirm whether under (ii) DNA marker test there are always resistance alleles present in Gene I2 to both race 0 (ex 1) and race 1 (ex 2).)  *Leading Expert:*  *Ad. 48 (ii)*  *To read “Dominant resistance gene I2 is always associated with resistance to both race 0 (ex 1) and race 1 (ex 2). The presence or absence of the resistance allele can be detected by the co-dominant marker as described in this method.”*  *Ad. 51 (ii)*  *To read “Resistance gene Tm2 gives resistance to ToMV. Gene Tm2 has two dominant resistance alleles: resistance allele Tm2 is always associated with resistance to strain 0 and 1, resistance allele Tm22 is always associated with resistance to strain 0, 1 and 2. The presence or absence of both resistance alleles can be detected by the co-dominant markers as described in Arens, P. et al (2010). Specific aspects: “*  *Ad. 58 (ii)*  *To read “Dominant resistance gene Sw-5 is always associated with resistance to TSWV strain 0. The presence or absence of the resistance allele can be detected by the co-dominant marker as described in Dianese, E.C. et al (2010). Specific aspects: ”* |
| Ad. 48 (i), 4.  Footnotes | | to indicate e-mail and web address of the institutions instead of personal e-mail addresses  *Leading Expert: Valerie.grimault@geves.fr to be changed into* [*matref@geves.fr*](mailto:matref@geves.fr)*.*  [*cardaba@inia.sp*](mailto:cardaba@inia.sp)*: no alternative available yet.* |
| Ad. 48 (ii) 2. | | to clarify meaning of “quarantine status”  *Leading Expert: 48 (ii) 2 is not quarantine status, but ‘functional gene’. A gene never has a quarantine status. A DNA-test is not related to quarantine issues.* |
| Ad. 48 (ii) 3. | | to read  “~~Susceptible allele~~ Allele for susceptibility  ~~Resistant allele~~ Allele for resistance”  *Leading Expert: agreed* |
| Ad. 48 (ii) 4.2 | | to check whether to add control varieties as example varieties in the table of characteristics  *Leading Expert:*  *Ad. 48 (ii) 4.2*  *homozygous allele for susceptibility present: Marmande verte, Marporum, Moneymaker*  *homozygous allele for resistance present: Motelle, Tradiro*  *48.1 race 0 (ex 1), example varieties*  *absent [1] Marmande verte, Moneymaker*  *present [9] Marporum, Motelle, Tradiro*  *48.2 race 1 (ex 2), example varieties*  *absent [1] Marmande verte, Marporum, Moneymaker*  *present [9] Motelle, Tradiro*  *(Explanation: Anabel, Marsol, Walter are not available anymore)*  *In order to be coherent, the same should be done in Ad. 51 (ii) 4.2 and Ad. 58 (ii) 4.2*  *Ad. 51 (ii) 4.2*  *homozygous allele for susceptibility tm2 present: Mobaci, Monalbo, Moneymaker*  *homozygous allele for resistance Tm2 present: Moperou*  *homozygous allele for resistance Tm22 present: Mocimor, Momor*  *51.1 strain 0, example varieties*  *absent [1] Monalbo, Moneymaker*  *present [9] Mobaci, Mocimor, Momor, Moperou*  *51.2 strain 1, example varieties*  *absent [1] Monalbo, Moneymaker*  *present [9] Mocimor, Momor, Moperou*  *51.3 strain 2, example varieties*  *absent [1] Monalbo, Moneymaker, Moperou*  *present [9] Mobaci, Mocimor, Momor*  *Ad. 58 (ii) 4.2*  *homozygous allele 1 for susceptibility present: Moneymaker*  *homozygous allele 2 for susceptibility present: Mountain Magic*  *homozygous allele for resistance present: Montealto*  *heterozygous (allele for resistance and allele 1 for susceptibility present): Bodar*  *58, example varieties*  *absent [1] Montfavet H 63.5, Moneymaker, Mountain Magic*  *present [9] Bodar, Montealto*  *(Explanation: Lisboa is not available anymore)* |
| Ad. 48 (ii) 8. | | 48.1 reference to “absent” is missing (see 48.2).  *Leading Expert: To add:*  *absent [1] can not be concluded from the DNA-test, a bio-assay should be performed.* |
| Ad. 48 (ii) 8.  48.1 and 48.2 | | to read “In case the DNA marker test result does not confirm the declaration in the TQ, a bio-assay should be performed to observe whether ~~the resistance is absent or present for~~ the variety is resistant e.g. ~~(~~on another mechanism like gene I3~~)~~.”  *Leading Expert: agreed* |
| Ad. 51 (i), 4.  Footnotes | | to indicate e-mail and web address of the institutions instead of personal e-mail addresses  *Leading Expert: Valerie.grimault@geves.fr to be changed into* [*matref@geves.fr*](mailto:matref@geves.fr)*.*  [*cardaba@inia.sp*](mailto:cardaba@inia.sp)*: no alternative available yet.* |
| Ad. 51 (ii) | | Arens, P. et al (2010) to be added to 9. Literature  *Leading Expert: agreed* |
| Ad. 51 (ii) 2 | | to clarify that there are 3 alleles: 2 dominant ones for resistance and 1 susceptible  *Leading Expert: Tm2/22 (with two resistance alleles Tm2 and Tm22 and one susceptibility allele tm2)* |
| Ad. 51 (ii) 3.2 | | to read “Assay 2 to check ~~susceptible or resistance~~ allele for susceptibility or resistance”  *Leading Expert: agreed* |
| Ad. 51 (ii) 4.2 | | to clarify allelic basis for resistance  *Leading Expert: See above, Ad. 51 (ii), where was asked for the meaning of ‘often’. Not to repeat at Ad. 51 (ii) 4.2.* |
| Ad. 51 (ii) 8. | | to read “In case the DNA marker test result does not confirm the declaration in the TQ, a bio-assay should be performed to observe whether ~~the resistance is absent or present for~~ the variety is resistant e.g. ~~(~~on another mechanism like gene Tm1~~)~~.”  *Leading Expert: agreed* |
| Ad. 51 (ii) | | Table on test results (below 8.): to delete “~~(occurs incidentally)~~”  *Leading Expert: agreed* |
| Ad. 58 (ii) | Dianese, E.C. *et al* (2010) to be added to 9. Literature  *Leading Expert: agreed* | |
| Ad. 58 (ii) 3. | to read  “~~Susceptible allele~~ Allele for susceptibility  ~~Resistant allele~~ Allele for resistance”  *Leading Expert: agreed* | |
| Ad. 58 (ii) 8. | to read  “homozygous ~~susceptible~~ susceptibility allele 1 present  homozygous ~~susceptible~~ susceptibility allele 2 present  homozygous ~~resistant~~ resistance allele present:”  *Leading Expert: agreed* | |
| Ad. 58 (ii) 8. | to read “In case the DNA marker test result does not confirm the declaration in the TQ, a bio-assay should be performed to observe whether ~~the resistance is absent or present for~~ the variety is resistant e.g. ~~(~~on another mechanism~~)~~.”  *Leading Expert: agreed* | |

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