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**INTERNATIONAL UNION FOR THE PROTECTION OF NEW VARIETIES OF PLANTS**  
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**TECHNICAL WORKING PARTY FOR FRUIT CROPS**

**Forty-Sixth Session**  
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ADDENDUM TO TGP DOCUMENTS

*Document prepared by the Office of the Union*

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1. The purpose of this document is to report the comments on TGP documents made by the Technical Working Party for Vegetables (TWV), at its forty-ninth session, held in Angers, France, from June 15 to 19, 2015, the Technical Working Party on Automation and Computer Programs (TWC), at its thirty-third session, held in Natal, Brazil, from June 30 to July 3, 2015, and the Technical Working Party for Agricultural Crops, at its forty-fourth session, held in Obihiro, Japan, from July 6 to 10, 2015.

2. The structure of this document is as follows:

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*TGP documents*

3. The TWV, the TWC and the TWA considered developments concerning TGP documents on the basis of documents TWV/49/3, TWC/33/3 and TWA/44/3 (see documents TWV/49/32 "Report", paragraph 16, TWC/33/30 "Report", paragraph 9 and TWA/44/23 "Report, paragraph 10, respectively).

TGP Documents

*Program for the development of TGP documents*

4. The TWV, the TWC and the TWA noted the program for the development of TGP documents, as set out in the Annex to document TWV/49/3, TWC/33/3 and TWA/44/3, respectively.

5. The TWV, the TWC and the TWA considered the TGP documents below on the basis of document TWV/49/3, TWC/33/3 and TWA/44/3 "TGP documents", respectively, and other documents, as indicated.

TGP/7: Development of Test Guidelines

*Revision of document TGP/7: Drafter's Kit for Test Guidelines*

6. The TWV, TWC and TWA considered documents TWV/49/12, TWC/33/12 and TWA/44/12, respectively.

7. The TWV, TWC and TWA noted that all Leading Experts had prepared the draft Test Guidelines for discussion during the TWPs at their sessions in 2015 using the web-based TG Template.

8. The TWV, TWC and TWA noted that all Interested Experts had been required to provide their comments on draft Test Guidelines for discussion during the TWPs at their sessions in 2015 using the web-based TG Template.

9. The TWV, TWC and TWA noted the issues being addressed in response to the comments by Leading and Interested Experts that participated in the testing of the 2015 prototype of the web-based TG Template, as set out in paragraphs 13 and 14 of documents TWV/49/12, TWC/33/12 and TWA/44/12, respectively. The TWV agreed with the proposed solutions for those issues:

- Allow use of italics and underlined text
- Improve the organization of images in explanation of characteristics (Chapter 8.2)
- Improve formatting of the Test Guidelines generated
- Provide a print preview for each Chapter
- Allow inclusion of annexes and/or growth stage keys (Chapter 8.3)
- Ensure compatibility with different web browsers versions
- Provide a link to templates for grids for shape characteristics that include ratio elements
- Enable printing of comments by interested experts sorted by Interested Expert or characteristic
- Provide more options in Chapter 4 "Assessments" for complex arrangements of Uniformity assessment.

10. The TWV further proposed the following improvements:

- Addition of hyperlinks in the exported documents to the symbols indicating that a characteristic has explanations covering individual and/or several characteristics in the Table of Characteristics in order to facilitate navigation in the document
- Addition of disclaimer for Leading Expert that all text, photographs, illustrations or other material used in the Test Guidelines that is subject to third party rights have the necessary permission for use by the third party.
- Possibility to adapt Standard and Additional Standard Wording to mushrooms (e.g. replacement of "plant material" by "material", "plants" by "fruit bodies")
- Possibility to display large tables in landscape format, such as for indication of growth types.
- Possibility for Interested Experts to provide illustrations

11. The TWV considered the proposal to standardize the format of the Table of Characteristics in all Test Guidelines with a structure as set out in paragraph 15 of document TWV/49/12. In order to clarify that the row with the indications of types of expression, methods of observations, explanations and growth stages was not related to the header above (which indicated the UPOV language), the TWV proposed to add borders between the information on types of expression, methods of observations, explanations and growth stages. The TWV further requested that the states of expression in the exported documents be clearly linked to the respective notes, particularly when a large number of example varieties was added.

12. The TWV agreed that subject to the above modifications Version 1 of the web-based TG Template would be a useful tool for the drafting of Test Guidelines and acknowledged the support provided to experts who used the web-based TG Template for the creation of the TWV draft Test Guidelines.

13. The TWV highlighted the importance of appropriate training on the use of the web-based TG Template in conjunction with the TWP sessions for Leading and Interested Experts using the system.

14. The TWV, TWC and TWA agreed that a detailed proposal for the revision of document TGP/7 reflecting the introduction of the web-based TG Template be presented to the TWPs and the TC in 2016, after Version 1 is finalized.

15. The TWV, TWC and TWA noted the timetable for development of the web-based TG Template, as set out in paragraphs 17 to 19 of documents TWV/49/12 and TWC/33/12, respectively.

16. The TWC and TWA agreed with the proposal to standardize the format of the Table of Characteristics in all Test Guidelines with a structure as set out in paragraph 15 of documents TWC/33/12 and TWA/44/12, respectively.

*Revision of document TGP/7: Use of Proprietary Photographs and Illustrations in Test Guidelines*

17. The TWV, TWC and TWA considered documents TWV/49/13, TWC/33/13 and TWA/44/13, respectively.

18. The TWV, TWC and TWA agreed with the proposed guidance for inclusion in a future revision of document TGP/7 in relation to text, photographs or illustrations that could be subject to third party rights, as follows:

“In the case of text, photographs, illustrations or other material that are subject to third party rights, it is the responsibility of the author of the document, including Test Guidelines, to obtain the necessary permission of the third party. Material must not be included in documents where such permission is required but has not been obtained.”

19. The TWV recommended to add a disclaimer in relation to text, photographs or illustrations in the web-based TG template.

20. The TWC agreed that drafters of UPOV documents should also be requested to ensure that they had obtained the necessary authorization, as appropriate, for the use of text, photographs, illustrations or other materials in those documents.

21. The TWA agreed that references should be provided in Chapter 9 “Literature” of the Test Guidelines for all text, photographs and illustrations that were subject to third party rights and for which permission had been obtained.

22. The TWA agreed that the third party granting permission should be informed about the extent of use of UPOV documents by its members.

*Revision of document TGP/7: Regional Sets of Example Varieties*

23. The TWV, TWC and TWA considered documents TWV/49/14, TWC/33/14 and TWA/44/14, respectively.

24. The TWV agreed to include guidance in document TGP/7 on the definition of “region” in order to justify a regional set of example varieties in Test Guidelines. However the TWV suggested that a “region” should be defined by environmental conditions rather than geographical borders.

25. The TWA agreed with the TWV that, in the case of regional sets of example varieties, a “region” should be defined by the environmental conditions rather than national boundaries.

26. The TWV highlighted that the purpose of the UPOV Test Guidelines was international harmonization and therefore was not in favor of regional sets of example varieties as a common practice. However, the TWV agreed that, in the case of the establishment of a regional set of example varieties, the relevant TWPs should determine the basis on which the region would be established for a regional set of example varieties (e.g. by an exchange of information, or by a ring-test).

27. The TWC and the TWA agreed to include guidance in document TGP/7 that a “region” should be comprised of more than one country in order to justify a regional set of example varieties in Test Guidelines.

28. The TWC and the TWA agreed to include guidance in document TGP/7 that the TWP should determine the basis on which the region would establish an agreed regional set of example varieties (e.g. by an exchange of information, or by a ring-test).

TGP/8: Trial Design and Techniques Used in the Examination of Distinctness, Uniformity and Stability

*Revision of document TGP/8: Part I: DUS Trial Design and Data Analysis, New Section: Minimizing the Variation due to Different Observers*

29. The TWV, TWC and TWA considered documents TWV/49/15, TWC/33/15 and TWA/44/15, respectively.

30. The TWV and TWC agreed that the draft guidance in the Annex to document TWV/49/15 should continue to be developed for inclusion in a future revision of document TGP/8 on minimizing the variation due to different observers.

31. The TWV suggested that further consideration should be given to guidance on PQ characteristics and proposed the development of another section in the document to explain non-parametric methods. The TWV also encouraged the other TWPs to consider whether further work should be done on PQ characteristics in the draft guidance.

32. The TWC agreed that further information should be provided on variation between observers for PQ characteristics before guidance could be drafted on the use of non-parametric methods, such as frequency of deviations.

33. The TWC agreed to invite the experts from Argentina and Brazil to make a presentation at its thirty-fourth session on their experiences in training for minimizing variation between observers on PQ characteristics.

34. The TWA agreed with the draft guidance in the Annex to document TWA/44/15, for inclusion in a future revision of document TGP/8 on minimizing the variation due to different observers.

*Revision of document TGP/8: Part II: Selected Techniques Used in DUS Examination, Section 9: the Combined-Over-Years Uniformity Criterion (COYU)*

35. The TWV, TWC and TWA considered documents TWV/49/16, TWC/33/16 and TWC/33/16 Add., and TWA/44/16, respectively.

36. The TWV and TWA noted that the participants of the exercise to test the software on the new method for the calculation of COYU should:

- (i) seek to define probability levels to match decisions using the previous COYU method;
- (ii) run the test for rejection probabilities of 1, 2 and 5% levels; and
- (iii) assess whether the results are consistent in all crops

37. The TWV and TWA noted that the expert from the United Kingdom had distributed the software module for calculation of COYU and the guidance document to the participants of the exercise.

38. The TWV and TWA noted that the experts from Czech Republic, France, Finland, Germany, Kenya, Poland and United Kingdom would participate in the exercise to test the new software on COYU.

39. The TWV and TWA noted that a report on the practical exercise and the development of DUST module would be presented at the thirty-third session of the TWC by an expert from the United Kingdom.

40. The TWC noted that the experts from Finland, France, Germany, Kenya and the United Kingdom had participated in the exercise to test the new software on COYU.

41. The TWC considered the report on the practical exercise as presented by an expert from the United Kingdom in the Annex to document TWC/33/16.

42. The TWC received a presentation on the "Method of calculation of COYU" from an expert from the United Kingdom, a copy of which is provided in an addendum to document TWC/33/16. The TWC agreed that the new method worked well in practice and requested that the expert from the United Kingdom provide guidance on extrapolation when the candidate has a level of expression outside that seen in the reference varieties.

43. The TWC noted the need for larger data sets to be tested in order to develop probability levels for the new method. Such data sets should include at least 100 candidate varieties, with a possibility that data for those 100 varieties could be derived from several years.

44. The TWC agreed to invite the experts from China and France to join in the next steps of the practical exercise and to provide their data sets to be used in the testing. The TWC also agreed to invite the TWA to provide large data sets from field crops.

*Revision of document TGP/8: Part II: Selected Techniques used in DUS Examination, New Section: Examining DUS in Bulk Samples*

45. The TWV, TWC and TWA considered documents TWV/49/17, TWC/33/17 and TWA/44/17, respectively.

46. The TWV, TWC and TWA considered further information provided by an expert from the Netherlands on the example of a bulk characteristic in the Netherlands: Content of Glycoraphanin, as reproduced in Annex II to the respective documents. The TWA agreed that it would be necessary to analyze the data obtained from the assessment of the characteristic in order to understand the conclusions provided.

47. The TWV, TWC and TWA noted that the TC, at its fifty-first session, had agreed that further information on fulfilling the requirements of a DUS characteristic should be provided in the example of a characteristic examined on the basis of a bulk sample, and in that regard, considered a discussion paper provided by an expert from the Netherlands on uniformity requirements in bulk characteristics, as reproduced Annex I to the respective documents.

48. The TWC agreed that the elements (a) Control of the characteristic before it is accepted in the relevant guideline; (d) Subplots; (g) DNA analysis; and (i) Plant number in document TWC/33/17, Annex I might be further developed as a basis for guidance on the analysis of characteristics examined on the basis of bulk samples

49. The TWA considered document TWA/44/17, Annex I, provided by an expert from the Netherlands on uniformity requirements in bulk characteristics and concluded as follows:

- before a characteristic observed on the basis of a bulk sample, was included in Test Guidelines it should be considered whether it would be useful and necessary for DUS examination.
- approaches (a) "Control of the characteristic before it is accepted in the relevant guideline"; (d) "Subplots"; and (i) "Plant number" in Annex I should be further developed for the analysis of requirements that a characteristic examined on the basis of bulk samples should fulfill before it is used for DUS testing and producing a variety description.
- approach (h) "DNA analysis" was too general and did not provide useful information for the assessment of uniformity in characteristics observed on the basis of bulk samples. The TWA noted that molecular markers could be used as a method of examining DUS characteristics on the basis of the existence of a reliable link between the marker and the characteristic, in which case the assessment on basis of bulk samples would not be necessary.

50. The TWV, TWC and TWA noted that the TC, at its fifty-first session, had agreed that the determination of states of expression should be based on existing variation between varieties and considering environmental influence.

51. The TWV invited the expert from the Netherlands, with support from the European Union, France and Germany, to continue the work done for improving the discussion paper, and to clarify the possible approaches feasible in the framework of DUS examination and in relation to a specific characteristic compared to the version presented to the TWV.

52. The TWV further agreed that characteristics to be examined on the basis of bulk samples should be carefully considered before inclusion in Test Guidelines.

53. The TWV noted that France, at the fifty-first session of the TC, had offered to provide other examples of characteristics based on bulk samples and invited other members to provide examples, particularly for vegetable crops.

54. The TWC and TWA noted the offer of France to provide other examples of characteristics based on bulk samples and that the TC had invited other members to provide examples.

55. The TWV, TWC and TWA noted that the TC, at its fifty-first session, had agreed to consider further whether the analysis of individual plants to validate characteristics examined on the basis of bulk samples was necessary, and the possible cost implications, and had invited alternative approaches for the examination of uniformity to be proposed.

56. The TWV agreed that characteristics examined on the basis of bulk samples should be assessed on the basis of the number of plants recommended in the Test Guidelines under Chapter 4.1.4.

57. The TWC considered whether characteristics examined on the basis of bulk samples should be assessed on the basis of the number of plants recommended in the Test Guidelines under Chapter 4.1.4. It agreed that this approach would be preferable from a statistical perspective but noted that such an approach was not feasible for the example provided because of the cost of analysis of glycoraphanin content for individual plants.

*Revision of document TGP/8: Part II: Selected Techniques Used in DUS Examination, New Section: Data Processing for the Assessment of Distinctness and for Producing Variety Descriptions*

58. The TWV, TWC and TWA considered documents TWV/49/18, TWC/33/18 and TWA/44/18, respectively.

59. The TWV, TWC and TWA noted that the TWC and the TWA had agreed that the guidance on "Different forms that variety descriptions could take and the relevance of scale levels", as reproduced in Annex I to documents TWV/49/18 and TWC/33/18, respectively, should be used as an introduction to future guidance to be developed on data processing for the assessment of distinctness and for producing variety descriptions.

60. The TWV and TWA noted that the TWC had agreed to compare the results of the practical exercise presented by the different participants to identify differences in the results obtained for further understanding of the different methodologies, for consideration at the thirty-third session of the TWC, to be held in Natal, Brazil, from June 30 to July 3, 2015.

61. The TWV, TWC and TWA noted that the European Union had reported to the TC that the project on a ring test on Apple for the management of variety description to be launched in 2015 had been suspended.

62. The TWC considered the information in document TWC/33/18, Annex III with regard to the steps used in the methods provided by the participants in the practical exercise. The TWC agreed that the methods to assign a note to the candidate varieties were based on a combination of division into equal-spaced states, use of the results of examples varieties and/or crop expert judgment.

63. The TWC considered the differences in the results of the practical exercise presented by the different participants as a basis for understanding the differences in the methodologies provided by an expert from France, as presented in Annex III to document TWC/33/18.

64. The TWC agreed that an "X" marking should be added to the United Kingdom "Method 2" in the column "example varieties" of document TWC/33/18 Annex III, page 1. On that basis, the TWC agreed that the different methods to assign notes to candidate varieties could be briefly summarized in the table below (see document TWC/33/18 Annex III, page 1).

COUNTRY		Method : description	Example varieties	Crop expert judgment	Equal-spaced state
France	Method 1	Combined use of example varieties and reference collection	X		
	Method 2	Adjusted means from COY program + linear regression method calibrated with example varieties	X		
Italy		Average range of historical means + median used as "reference point" + partitioning into equal spaced states + calibration with crop expert judgment and example varieties	X	X	X
Germany		Adjusted mean from COY program + partitioning based on example varieties and crop expert judgment	X	X	
Japan		Adjusted Full Assessment Table (FAT) : states determined with historical data of example varieties	X		X
United Kingdom	Method 1	Range of expression of the over-year means for the reference collection varieties (for the past 10 years) divided into equal spaced states			X
	Method 2	Crop experts define delineating varieties whose over-year means are used to delineate each state	<u>X</u>	X	

65. The TWC noted that information on the methods used for data processing for the assessment of distinctness and for producing variety descriptions in China would be considered under agenda item 10 "Information on the methods used for data processing for the assessment of distinctness and for producing variety descriptions in China" of the agenda (see document TWC/33/23 "Application Management System (AMS) and Variety Description Database (VDD) in China").

#### TGP/10: Examining Uniformity

*Revision of document TGP/10: Assessing uniformity by off-types on basis of more than one growing cycle or on the basis of sub-samples*

66. The TWV, TWC and TWA considered documents TWV/49/9, TWC/33/9 and TWA/44/9, respectively.

67. The TWV agreed with the draft guidance for inclusion in a future revision of document TGP/10, as presented in Annexes I and II to document TWV/49/9.

68. The TWC considered the draft guidance in document TWC/33/9, Annex I, and agreed to propose amending the title of Approach 2 to read "Combining the results of two growing cycles in the case of inconsistent results".

69. The TWC received a presentation by the experts from Germany and the United Kingdom, as reproduced in document TWC/33/25, and agreed to propose the addition of the third approach to the draft guidance as follows:

#### **"Approach 3: Combining the results of two growing cycles**

"A variety is considered uniform if the total number of off-types at the end of the two growing cycles does not exceed the number of allowed off-types for the combined sample.

"A variety is considered non-uniform if the total number of off-types at the end of the two growing cycles exceeds the number of allowed off-types for the combined sample.

"A variety may be rejected after a single growing cycle, if the number of off-types exceeds the number of allowed off-types for the combined sample (over two cycles).

“Care is needed when considering results that are very different in each of the growing cycles, such as when a type of off-type is observed at a high level in one growing cycle and is absent in another growing cycle. A statistical test for consistency is possible.”

70. The TWC noted that the approach presented by the experts from Germany and the United Kingdom was used in the United Kingdom and always combined the results of two growing cycles. The TWC noted the explanation that this approach allowed an early decision on uniformity to be taken when the number of off-types was greater in a sub-sample than the allowed number for the combined sample. The TWC also noted the explanation that this approach reduced the type 2 error (to accept a non-uniform variety), when compared with the other two approaches presented in the draft guidance, by considering the overall risk of the combined samples instead of the risks for each stage of evaluation separately.

71. The TWC agreed that the presentation made by the experts from Germany and the United Kingdom should be made available to the other TWPs.

72. The TWA agreed that the draft guidance for inclusion in a future revision of document TGP/10, as presented in document TWA/44/9 Annex I, should continue to be developed considering the information provided by the TWC on the proposed “Approach 3: combining the results of two growing cycles” and the comparison between the overall risk of the combined samples and the risks for each stage of evaluation separately. The TWA agreed to request a video link with the experts from the TWC to discuss the proposed “Approach 3”.

73. The TWA agreed to propose that the first sentence in Annex I be amended to read: “two independent growing cycles could take place in a single location in different years, or in different locations in the same year, according to document TGP/8 Part I, Sections 1.2 and 1.3.”

74. The TWA considered the draft guidance provided in document TWA/44/9 Annex I, on the possibility to reject a variety on the basis of a lack of uniformity after a single growing cycle. The TWA agreed that a variety should not be rejected if the uniformity standard is slightly exceeded in the first year. This possibility should only be used if it can be foreseen that the maximum limit will be exceeded also in another growing cycle. In this regard, the TWA agreed to propose that the explanation provided in Annex I on the possibility to reject a variety on the basis of a lack of uniformity after a single growing cycle should be amended to read: “Furthermore, on the basis of a clear lack of uniformity, a variety may be rejected after a single growing cycle.”

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