

Technical Working Party for Vegetables

Fifty-Fifth Session
Antalya, Turkey, May 3 to 7, 2021

TWP/5/10

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Technical Working Party for Ornamental Plants and Forest Trees

Fifty-Third Session
Roelofarendsveen, Netherlands, June 7 to 11, 2021

Technical Working Party for Agricultural Crops

Fiftieth Session
Arusha, United Republic of Tanzania, June 21 to 25, 2021

Technical Working Party for Fruit Crops

Fifty-Second Session
Zhengzhou, China, July 12 to 16, 2021

Technical Working Party on Automation and Computer Programs

Thirty-Ninth Session
Alexandria, United States of America, September 20 to 22, 2021

DATA PROCESSING FOR THE PRODUCTION OF VARIETY DESCRIPTIONS FOR MEASURED QUANTITATIVE CHARACTERISTICS

Document prepared by the Office of the Union

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EXECUTIVE SUMMARY

1. The purpose of this document is to present developments concerning possible new guidance on methods to convert observations into notes for producing variety descriptions for measured quantitative characteristics for inclusion in document TGP/8 "Trial Design and Techniques Used in the Examination of Distinctness, Uniformity and Stability".

2. The TWPs are invited to:

(a) note that the TC agreed to invite the TC Chairperson in conjunction with the Office of the Union to develop proposals on next steps for developing guidance, to be presented to the TWPs and the TC at their sessions in 2021;

(b) consider the inclusion of the guidance on "Different forms that variety descriptions could take and the relevance of scale levels" in document TGP/8 Part I Section 2 "Data to be recorded" as new Section 2.5; and

(c) consider whether to invite members of the Union to propose the inclusion of software incorporating their methods for converting observations into notes in document UPOV/INF/16 or document UPOV/INF/22, as appropriate, with a reference to the availability of such methods in document TGP/8 Part I, new Section 2.5.

3. The structure of this document is as follows:

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ANNEX "Different forms that variety descriptions could take and the relevance of scale levels", document prepared by an expert from Germany

4. The following abbreviations are used in this document:

TC:	Technical Committee
TC-EDC:	Enlarged Editorial Committee
TWA:	Technical Working Party for Agricultural Crops
TWC:	Technical Working Party on Automation and Computer Programs
TWF:	Technical Working Party for Fruit Crops
TWO:	Technical Working Party for Ornamental Plants and Forest Trees
TWPs:	Technical Working Parties
TWV:	Technical Working Party for Vegetables

BACKGROUND

5. The Technical Committee (TC), at its forty-eighth session¹, considered Annex III: "TGP/8 PART I: DUS Trial Design and data analysis, New Section 6 – Data processing for the assessment of distinctness and for producing variety Descriptions" in conjunction with Annex VIII: "TGP/8 PART II: Techniques used in DUS Examination, New Section 13 - Methods for data processing for the assessment of distinctness and for producing variety descriptions" of document TC/48/19 Rev. It agreed that the information provided in Annex VIII of document TC/48/19 Rev. and at the UPOV DUS Seminar, held in Geneva in March 2010, together with the method provided by Japan and the method used in France for producing variety descriptions for herbage crops, as presented at the TWC at its twenty-sixth session², provided a very important first step in developing common guidance on data processing for the assessment of distinctness and for producing variety descriptions, but concluded that the information as presented in Annex VIII of document TC/48/19 Rev. would not be appropriate for inclusion in document TGP/8. It agreed that the Office of the Union should summarize the different approaches set out in Annex VIII of document TC/48/19 Rev. with regard to aspects in common and aspects where there was divergence. As a next step, on the basis of that summary, consideration could be given to developing general guidance. The TC agreed that the section should include examples to cover the range of variation of characteristics. It further agreed that the detailed information on the methods should be made available via the UPOV website, with references in document TGP/8 (see document TC/48/22 "Report on Conclusions" paragraph 52).

6. The TC, at its fifty-second session, held in Geneva from March 14 to 16, 2016, agreed with the TWC and the TWA that the guidance on "Different forms that variety descriptions could take and the relevance of scale levels", as reproduced in the Annex to this document, should be used as an introduction to future guidance on data processing for the assessment of distinctness and for producing variety descriptions (see document TC/52/29 "Revised Report", paragraph 117).

7. Other developments prior to 2020 are reported in document TWP/4/10 "Data Processing for Producing Variety Descriptions for Measured Quantitative Characteristics".

DEVELOPMENTS AT THE TECHNICAL WORKING PARTIES AT THEIR SESSIONS IN 2020

8. At their sessions in 2020, the TWV³, TWO⁴, TWA⁵ and TWF⁶ considered document TWP/4/10 "Data processing for the production of variety descriptions for measured quantitative characteristics". The TWC⁷ considered documents TWP/4/10 and TWC/38/5 "Data processing for the production of variety descriptions for measured quantitative characteristics – information from Italy" (see documents TWV/54/9 "Report", paragraphs 30 to 32; TWO/52/11 "Report", paragraphs 14 and 15; TWA/49/7 "Report", paragraphs 17 to 20; TWF/51/10 "Report", paragraphs 30 to 33 and TWC/38/11 "Report", paragraphs 14 to 17).

¹ held in Geneva from March 26 to 28, 2012.

² see document TWC/26/15, TWC/26/15 Add. and TWC/26/24

³ at its fifty-fourth session, held from May 11 to 15, 2020.

⁴ at its fifty-second session, held from June 8 to 12, 2020.

⁵ at its forty-ninth session, held from June 22 to 26, 2020.

⁶ at its fifty-first session, held from July 6 to 10, 2020.

⁷ at its thirty-eighth session, held from September 21 to 23, 2020.

9. The TWV, TWO, TWA, TWF and TWC considered the different approaches to convert observations into notes for producing variety descriptions for measured quantitative characteristics, as presented in the annexes to document TWP/4/10.

10. The TWO agreed that the approaches were primarily aimed at species with larger sample sizes and multi-year data sets, which was not often the case for ornamental species.

11. The TWF agreed with the comment made by the TWO that the different approaches to convert observations into notes for measured quantitative characteristics presented in document TWP/4/10 were primarily aimed at species with larger sample sizes and multi-year data sets. The TWF agreed that this was not often the case for fruit crops, especially when using small samples sizes.

12. The TWV noted the comments provided by the European Union and Germany on the methods described in the Annexes of document TWP/4/10 and agreed to request the following additional information:

Annex III, French Method 2:

- Please describe what are the variables “a” and “B” in the regression model “ $Y = a + Bx$ ”
- Please provide an explanation on the graphic “Example for the characteristic flowering time of sunflower” in particular whether each blue dot in the graphic is an example variety and how the blue dots are calculated (a value per variety but calculated over years?)
- Please clarify the scale of the graph. Note 10 should not be possible according to the characteristic

Annex IV, Japanese method:

- Please clarify whether the word “distance” used in the text means “width of class”

Annex VI, German method, slide 16:

- Please clarify whether the difference between the states of expression is always the same (6 cm);
- Please clarify whether example varieties are taken into account.

13. The TWA agreed that all mentions to “Adjusted Full Assessment Table (FAT)” in document TWP/4/10, Annex II, should be amended to read “Adjusted Fundamental Assessment Table (FAT)”.

14. The TWA noted that the document provided a summary of approaches developed for different testing conditions and agreed that it would not be necessary to request further information to facilitate their application at this stage.

15. The TWF noted that characteristics assessed on the basis of measurement of a number of individual plants or parts of plants (MS) were being included in Test Guidelines and agreed to invite members to report on the approaches used to convert observations to notes, at its fifty-second session.

16. The TWC agreed that the description of the Italian method provided in document TWP/4/10, Annex VII, should be replaced by the description provided in document TWC/38/5.

17. The TWC agreed that the information provided in document TWP/4/10 did not provide sufficient information to explain the situations when each method would and would not be suitable. The TWC agreed there were complex circumstances influencing the choice of method to be used for converting observations into notes and agreed to propose that the development of guidance be discontinued.

DEVELOPMENTS AT THE TECHNICAL COMMITTEE AT ITS SESSION IN 2020

18. The TC, at its fifty-sixth session⁸, considered document TC/56/5 “Data processing for the production of variety descriptions for measured quantitative characteristics” (see document TC/56/23 “Report”, paragraphs 21 to 23).

19. The TC considered the different approaches to convert observations into notes for producing variety descriptions for measured quantitative characteristics, as presented in document TC/56/5, Annexes III to VII, in conjunction with the additional information provided by Italy and Japan, as presented in document TC/56/5, paragraph 12.

⁸ held via electronic means on October 26 and 27, 2020

20. The TC agreed that guidance on converting observation into notes would be beneficial for new members of the Union and international harmonization. The TC agreed that further information would be required to explain the complex circumstances influencing the choice of method to be used to convert observations into notes.

21. The TC agreed to invite the TC Chairperson in conjunction with the Office of the Union to develop proposals on next steps for developing guidance, to be presented to the TWPs and the TC at their sessions in 2021.

PROPOSAL FOR NEXT STEPS

22. With regard to the request of the TC, at its forty-eighth session, for considering the development of common guidance on data processing for the assessment of distinctness and for producing variety descriptions, it is recalled that the TC concluded that the information as presented in Annex VIII of document TC/48/19 Rev. would not be appropriate for inclusion in document TGP/8 and agreed that the detailed information on the methods should be made available via the UPOV website, with references in document TGP/8 (see document TC/48/22 "Report on Conclusions" paragraph 52).

23. In accordance with the agreement of the TC, at its fifty-second session, it is proposed that the guidance on "Different forms that variety descriptions could take and the relevance of scale levels" be included in document TGP/8 Part I "DUS trial design and data analysis" Section 2 "Data to be recorded" as new Section 2.5 (see Annex to this document).

24. With regard to providing information on methods for data processing for the assessment of distinctness and for producing variety descriptions, it is recalled that UPOV has created the following documents for making methods available via the UPOV website:

- document UPOV/INF/16 "Exchangeable Software"
- document UPOV/INF/22 "Software and equipment used by members of the Union"

25. On the above basis, it is proposed that members of the Union be invited to propose the inclusion of software incorporating their methods in document UPOV/INF/16 or document UPOV/INF/22, as appropriate, with a reference to the availability of such methods in document TGP/8 Part I, new Section 2.5.

26. *The TWPs are invited to:*

(a) note that the TC agreed to invite the TC Chairperson in conjunction with the Office of the Union to develop proposals on next steps for developing guidance, to be presented to the TWPs and the TC at their sessions in 2021;

(b) consider the inclusion of the guidance on "Different forms that variety descriptions could take and the relevance of scale levels" in document TGP/8 Part I Section 2 "Data to be recorded" as new Section 2.5; and

(c) consider whether to invite members of the Union to propose the inclusion of software incorporating their methods for converting observations into notes in document UPOV/INF/16 or document UPOV/INF/22, as appropriate, with a reference to the availability of such methods in document TGP/8 Part I, new Section 2.5.

[Annex follows]

DIFFERENT FORMS THAT VARIETY DESCRIPTIONS COULD TAKE AND THE RELEVANCE OF SCALE LEVELS




Variety descriptions can be based on different data depending on the purpose of the description. Different variety descriptions may be used for the assessment of distinctness or in the official document which forms the basis for granting protection. When variety descriptions are used for the assessment of distinctness it is important to take into account on which data the descriptions for different varieties are based. Special attention has to be given to the potential influence of years and locations.

The different forms of variety descriptions and their relevance for the assessment of distinctness can be classified according to the different process levels to look at a characteristic. The process levels are defined in document TGP/8: Part I "DUS trial design and data analysis" Section 2 "Data to be recorded" as follows:

Table 5: Definition of different process levels to consider characteristics

Process level	Description of the process level
1	characteristics as expressed in trial
2	data for evaluation of characteristics
3	variety description

The process levels relevant for the assessment of distinctness are level 2 and 3. Any comparison between varieties in the same trial (same year(s), same location) is carried out on the actual data recorded in the trial. This approach relates to process level 2. If varieties are not grown in the same trial, they have to be compared on the basis of variety descriptions which relates to process level 3. In general, the identification of similar varieties to be included in the growing trial ("Management of variety collection") relates to process level 3, whereas data evaluation within the growing trial relates to process level 2.

Process level	Measurements (QN)	Visual assessment (QN/QL/PQ)	Remark
2	Values	Notes	Basis for comparison within the same trial
3	 Transformation into notes Notes	 Same Notes as in Process level 1 Notes  "Mean variety description"	Notes resulting from one year and location Basis for management of variety collection
	If varieties are assessed in several trials/years/locations mean descriptions can be established.		

In general, quantitative characteristics are influenced by the environment. An efficient way to reduce the environmental influence is the transformation of actual measurements into notes. The notes represent a standardized description of varieties in relation to example varieties (see TGP/7). In addition, the comparability of variety descriptions for varieties not tested in the same trial can be improved by calculating a mean description over several growing cycles. In particular, the mean description over several growing cycles at the same location can provide a representative description related to the location. The calculation of a mean description over different locations should only be considered if the effects of the locations are very well known and variety x location interactions can be excluded for all characteristics. The calculation of mean descriptions over locations should be restricted to the cases where these conditions are fulfilled.

If variety descriptions from different growing trials are used for the assessment of distinctness - that means for the management of variety collections - it is important to take into account the origin of the different variety descriptions of the candidate variety and the varieties of common knowledge. The comparability of variety descriptions is influenced by many factors, for example:

- Description based on a single year or a mean over several years?
- Description based on the same location or different locations?
- Are the effects of the different location known?
- Varieties described in relation to the same variety collection or a variety collection which might cover a different range of variation?

The potential bias of variety descriptions due to environmental effects between candidate varieties and varieties in the variety collection have to be taken into account in the process of distinctness testing, and in particular, for the identification of varieties of common knowledge to be included in the growing trial.

[End of Annex and of document]