

**Technical Working Party for Ornamental Plants and Forest Trees**

Fifty-First Session

Christchurch, New Zealand, February 18 to 22, 2019

TWP/3/1 Rev.

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**Technical Working Party for Vegetables**

Fifty-Third Session

Seoul, Republic of Korea, May 20 to 24, 2019

**Technical Working Party for Fruit Crops**

Fiftieth Session

Budapest, Hungary, June 24 to 28, 2019

**Technical Working Party for Agricultural Crops**

Forty-Eighth Session

Montevideo, Uruguay, September 16 to 20, 2019

**Technical Working Party on Automation and Computer Programs**

Thirty-Seventh Session

Hangzhou, China, October 14 to 16 (morning), 2019

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**TGP DOCUMENTS***Document prepared by the Office of the Union**Disclaimer: this document does not represent UPOV policies or guidance***EXECUTIVE SUMMARY**

1. The purpose of this document is to provide an overview of revisions of TGP documents.

**Matters for adoption by the Council in 2019**

2. The TWPs are invited to note the revisions previously agreed by the TC to documents TGP/7, TGP/8, TGP/10, TGP/14 and TGP/15 that will be proposed for adoption by the Council at its fifty-third ordinary session, to be held in Geneva on November 1, 2019, subject to approval by the CAJ, at its seventy-sixth session, to be held in Geneva on October 30, 2019;

**Possible future revisions of TGP documents**

3. The TWPs are invited to note:

- (a) the matters for possible future revision of documents TGP/7, TGP/8, TGP/14 and TGP/15 which will be considered under separate documents;

- (b) the invitation by the United Kingdom for interested experts to get in contact for testing the new software containing the improved method of calculation of COYU;

- (c) the invitation by the TWC for the expert from the United Kingdom to draft a replacement section for document TGP/8 on the method of calculation of COYU;

#### New proposals for revisions of TGP documents

4. The TWPs are invited to:

(a) note that the TC, at its fifty-fourth session, considered a proposal to revise the procedure for partial revisions of Test Guidelines;

(b) note that the TC, at its fifty-fourth session, agreed that members should propose any alternative methods or markers for DNA-marker tests in Test Guidelines;

(c) note that the TC, at its fifty-fourth session, recalled that it was the responsibility of the TWPs to assess whether characteristics met the requirements for a characteristic, as set out in document TGP/7, including those characteristics in previously adopted Test Guidelines;

(d) note that the TC, at its fifty-fourth session, agreed to wait TWV discussion on disease resistance characteristics in DUS examination before considering whether to develop further guidance;

(e) consider revising document TGP/7 to have all states of expression for quantitative characteristics presented in Test Guidelines.

#### Program for the development of TGP documents

5. The TWPs are invited to note the program for the development of TGP documents, as set out in Annex VI to this document.

#### Technical Working Party for Fruit Crops

6. The TC, at its fifty-fourth session, considered whether to revise the procedure for partial revisions of Test Guidelines, on the basis of a proposal by the TWF.

7. The TWF is invited to:

(a) clarify under which circumstances changes would need to be implemented to UPOV Test Guidelines at short notice;

(b) clarify the type of changes that were intended to be covered by the proposed procedure; and

(c) provide specific examples of changes intended to be covered by the proposed procedure.

#### Technical Working Party for Vegetables

8. The TWV is invited to consider the use of disease resistance characteristics in DUS examination at its fifty-third session.

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10. The following abbreviations are used in this document:

BMT	Working Group on Biochemical and Molecular Techniques and DNA-Profiling in Particular
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
TWV:	Technical Working Party for Vegetables
TWPs:	Technical Working Parties

## BACKGROUND

11. The TC, at its fifty-fourth session, held in Geneva on October 28 and 29, 2018, and the CAJ, at its seventy-fifth session, held in Geneva on October 30, 2018, approved the program for the development of TGP documents, as set out in the Annex to documents TC/54/5 Rev. and CAJ/75/13, respectively, subject to the conclusions at their sessions (see document TC/54/31 "Report", paragraph 251, and document CAJ/75/14 "Report", paragraph 13).

12. The approved TGP documents are published on the UPOV website at [http://www.upov.int/upov\\_collection/en/](http://www.upov.int/upov_collection/en/).

13. The Council, at its thirty-fourth extraordinary session, held in Geneva on April 6, 2017, decided to organize a single set of sessions from 2018, in the period of October/November (see document C(Extr.)/34/6 "Report on the decisions", paragraphs 12 to 14). From 2018, the meetings of the TC will take place on October/November instead of March/April. The TC-EDC will meet twice a year; once in the period of March/April and once in conjunction with the TC sessions later in the year.

## MATTERS FOR ADOPTION BY THE COUNCIL IN 2019

14. The following revisions of TGP documents were agreed by the Technical Committee to be proposed for adoption by the Council at its fifty-third ordinary session, to be held in Geneva on November 1, 2019, subject to approval by the CAJ, at its seventy-sixth session, to be held in Geneva on October 30, 2019:

### Document TGP/7: Development of Test Guidelines

#### *Duration of DUS tests*

See Annex I to this document

#### *Procedure for the adoption of Test Guidelines by correspondence*

See Annex I to this document

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

#### *Examining DUS in Bulk Samples*

See Annex II to this document

#### *Method for more than one single test (year)*

15. The TC, at its fifty-fourth session, considered document TC/54/19 "Uniformity assessment on the basis of off-types: Method for more than one single test (year)" (see document TC/54/31 "Report", paragraphs 230 to 232).

16. The TC considered the proposal for the revision of guidance in document TGP/8/2: Part II: Section 8: Subsection 8.1.7: "Method for more than one single test (year)", on the basis of the draft set out in document TC/54/19, Annex II, in conjunction with the comments by the TWPs, at their sessions in 2018.

17. The TC noted that guidance on the same matter had been developed for document TGP/10 and agreed that the current guidance in document TGP/8/2: Part II: Section 8: Subsection 8.1.7 should be replaced by a cross-reference to the new guidance on "Assessing uniformity by off-types on the basis of more than one growing cycle or on the basis of sub-samples" to be included in document TGP/10 "Examining Uniformity."

### Document TGP/10: Examining uniformity

#### *Assessing Uniformity by Off-Types on the Basis of More than One Growing Cycle or on the Basis of Sub-Samples*

See Annex III to this document

Document TGP/14: Glossary of Terms Used in UPOV Documents

*Illustrations for shape and ratio characteristics*  
See Annex IV to this document

*Factors to be considered for creating color groups*  
See Annex IV to this document

Document TGP/15 “Guidance on the use of Biochemical and Molecular Markers in the examination of Distinctness, Uniformity and Stability (DUS)”

*Genetic Selection of Similar Varieties for the First Growing Cycle*  
See Annex V to this document

18. *The TWPs are invited to note the revisions previously agreed by the TC to documents TGP/7, TGP/8, TGP/10, TGP/14 and TGP/15 that will be proposed for adoption by the Council at its fifty-third ordinary session, to be held in Geneva on November 1, 2019, subject to approval by the CAJ, at its seventy-sixth session, to be held in Geneva on October 30, 2019.*

POSSIBLE FUTURE REVISIONS OF TGP DOCUMENTS

19. The TC, at its fifty-fourth session, held in Geneva on October 29 and 30, 2018, agreed the matters for possible future revision of TGP documents to be considered by the TWPs at their sessions in 2019, as follows (see document TC/54/31 “Report”, paragraphs 210 to 251):

TGP/7: Development of Test Guidelines

*Characteristics which only apply to certain varieties*  
See document TWP/3/9

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

*The Combined-Over-Years Uniformity Criterion (COYU)*

20. The TC considered document TC/54/17 “The combined-over-years uniformity criterion (COYU)” (see document TC/54/31 “Report”, paragraphs 221 to 224).

21. The TC noted that the statistical development of the new method of calculation of COYU had been completed, including the establishment of the probability levels required to most closely match decisions using the current method for calculation of COYU.

22. The TC noted the invitation by the United Kingdom for interested experts to get in contact for testing the new software containing the improved method of calculation of COYU.

23. The TC noted the invitation by the TWC for the expert from the United Kingdom to draft a replacement section for document TGP/8 on the method of calculation of COYU.

*Data Processing for the Assessment of Distinctness and for Producing Variety Descriptions*  
See document TWP/3/10

TGP/14: Glossary of Terms Used in UPOV Documents

*Color names for the RHS Colour Chart*  
See document TWP/3/11

TGP/15: Guidance on the Use of Biochemical and Molecular Markers in the Examination of Distinctness, Uniformity and Stability (DUS)

*New example: Characteristic-specific marker with incomplete information on state of expression*  
See document TWP/3/12

24. *The TWP are invited to note:*

(a) *the matters for possible future revision of documents TGP/7, TGP/8, TGP/14 and TGP/15 which will be considered under separate documents;*

(b) *the invitation by the United Kingdom for interested experts to get in contact for testing the new software containing the improved method of calculation of COYU; and*

(c) *the invitation by the TWC for the expert from the United Kingdom to draft a replacement section for document TGP/8 on the method of calculation of COYU.*

NEW PROPOSALS FOR REVISIONS OF TGP DOCUMENTS

TGP/7: Development of Test Guidelines

*Procedure for partial revision of UPOV Test Guidelines*

25. The TC, at its fifty-fourth session, considered whether to revise the procedure for partial revisions of Test Guidelines, on the basis of the following proposal by the TWF, as set out in document TC/54/3, paragraph 24 (see document TC/54/31 "Report", paragraphs 221 to 224):

- to accept any new proposal for partial revision of TGs by correspondence during the course of the year between two TWP sessions, with a deadline of 2 months before the session in order to prepare the document and circulate to the experts;
- to approve the addition of partial revision of Test guidelines by correspondence, giving 4 weeks for any objections;
- as the interested experts will not have been listed during the adoption of the report under agenda item "Proposals for partial revision of Test Guidelines", it is proposed to send the document for comments to all relevant TWP experts;
- to restrict this rule only to partial revisions.

26. The TC recalled that a similar proposal had been considered at its previous session and further recalled that UPOV members could amend their own test guidelines before changes were made to UPOV Test Guidelines.

27. The TC agreed to request the TWF to clarify under which circumstances changes would need to be implemented to UPOV Test Guidelines on short notice. In particular, the TC agreed to request clarification on the type of changes that were intended to be covered by the proposed procedure and to provide specific examples.

28. The TC agreed that, if an accelerated procedure were to be accepted, proposals for partial revisions of Test Guidelines would need to be published at least two months before the session to allow sufficient time for consideration by members.

29. *The TWPs are invited to note that the TC considered a proposal to revise the procedure for partial revisions of Test Guidelines.*

30. *The TWF is invited to:*

(a) *clarify under which circumstances changes would need to be implemented to UPOV Test Guidelines at short notice;*

(b) *clarify the type of changes that were intended to be covered by the proposed procedure; and*

(c) *provide specific examples of changes intended to be covered by the proposed procedure.*

#### *Proprietary method of assessment for male sterility*

31. The TC, at its fifty-fourth session, considered whether to invite the TWV to revise the Test Guidelines for Broccoli to accept the use of any other method to assess male sterility in a DNA-marker test, including alternative markers for the DNA-marker test, where validated by the testing authorities in UPOV members (see document TC/54/31 "Report", paragraphs 246 and 247).

32. The TC noted the importance of Test Guidelines for international harmonization and agreed that members should propose any alternative methods or markers for DNA-marker tests in Test Guidelines.

33. *The TWPs are invited to note that the TC, at its fifty-fourth session, agreed that members should propose any alternative methods or markers for DNA-marker tests in Test Guidelines.*

#### *Suitability of characteristics in previous versions of Test Guidelines*

34. The TC, at its fifty-fourth session, considered a situation where existing Test Guidelines characteristics did not meet the requirements set out in document TGP/7. The TC noted that the characteristics should meet the requirements for a characteristic set out in the General Introduction, which included provisions for characteristics observed in bulk samples, and agreed that it was the responsibility of the TWPs to assess whether these should be kept as DUS characteristics (see document TC/54/31 "Report", paragraph 248).

35. *The TWPs are invited to note that the TC, at its fifty-fourth session, recalled that it was the responsibility of the TWPs to assess whether characteristics met the requirements for a characteristic, as set out in document TGP/7, including those characteristics in previously adopted Test Guidelines.*

#### *Presentation of full scale of notes for quantitative characteristics in Test Guidelines*

36. All UPOV Test Guidelines contain the following explanation of the presentation of states of expression for quantitative characteristics (see document TGP/7 "Development of Test Guidelines", Annex I "TG Structure and Universal Standard Wording").

"In the case of qualitative and pseudo-qualitative characteristics (see Chapter 6.3), all relevant states of expression are presented in the characteristic. However, in the case of quantitative characteristics with 5 or more states, an abbreviated scale may be used to minimize the size of the Table of Characteristics. For example, in the case of a quantitative characteristic with 9 states, the presentation of states of expression in the Test Guidelines may be abbreviated as follows:

State	Note
small	3
medium	5
large	7

“However, it should be noted that all of the following 9 states of expression exist to describe varieties and should be used as appropriate:

State	Note
very small	1
very small to small	2
small	3
small to medium	4
medium	5
medium to large	6
large	7
large to very large	8
very large	9

37. Despite the inclusion of this explanation, there is widespread confusion and misunderstanding of the “abbreviated” scale. Furthermore, UPOV documentation, including Test Guidelines, have been made available on the UPOV website and are no longer sent as paper copies by mail to UPOV members. Therefore, the use of an abbreviated scale to minimize the size of the Table of Characteristics may no longer be appropriate. Presenting all states of expression for quantitative characteristics in the Table of Characteristics would also remove the need for special treatment of characteristics that are included in the Technical Questionnaire. A further benefit would be that all states of expression are needed for characteristics included in UPOV PRISMA. For these reasons, UPOV members may wish to consider presenting all states of expression for quantitative characteristics in Test Guidelines.

38. The TWPs are invited to consider revising document TGP/7, GN 20 “Presentation of characteristics: States of expression according to type of expression of a characteristic” and Annex 1 “TG structure and universal standard wording” to present all states of expression for quantitative characteristics included in Test Guidelines.

*39. The TWPs are invited to consider revising document TGP/7 to have all states of expression for quantitative characteristics presented in Test Guidelines.*

#### TGP/12: Guidance on Certain Physiological Characteristics

##### *Explanations on disease resistance characteristics*

40. The TC, at its fifty-fourth session, considered whether to invite the TWPs to develop further guidance on providing explanations for disease resistance characteristics in Test Guidelines using the Standard Resistance Protocol provided in document TGP/12 “Guidance on certain physiological characteristics”, including the elements that would not need to be completed (see document TC/54/31 “Report”, paragraphs 249 and 250).

41. The TC noted that the use of disease resistance characteristics would be discussed at the TWV, at its next session, and agreed to wait for the outcome of those discussions before developing further guidance.

*42. The TWPs are invited to note that the TC, at its fifty-fourth session, agreed to wait TWV discussion on disease resistance characteristics in DUS examination before considering whether to develop further guidance.*

*43. The TWV is invited to consider the use of disease resistance characteristics in DUS examination at its fifty-third session.*

44. The TC, at its fifty-fourth session, and the CAJ, at its seventy-fifth session, agreed the program for the development of TGP documents, as set out in Annex VI to this document (see document TC/54/31 "Report", paragraph 251, and document CAJ/75/14 "Report", paragraph 13).

*45. The TWPs are invited to note the program for the development of TGP documents, as set out in Annex VI to this document.*

[Annexes follow]

## ANNEX I

## MATTERS FOR ADOPTION BY THE COUNCIL IN 2019: REVISIONS TO DOCUMENT TGP/7

The following revisions of document TGP/7 “Development of Test Guidelines” were agreed by the Technical Committee to be proposed for adoption by the Council at its fifty-third ordinary session, to be held in Geneva on November 1, 2019, subject to approval by the CAJ, at its seventy-sixth session, to be held in Geneva on October 30, 2019 (~~highlighting and strikethrough~~ for deletions and highlighting and underline for addition):

(i) Duration of DUS tests:*Universal Standard Wording: Section 3.1: Number of Growing Cycles*

The TC, at its fifty-fourth session, considered document TC/54/14 “Duration of DUS tests” (see document TC/54/31 “Report”, paragraphs 210 to 212).

The TC agreed that the guidance in document TGP/7 should be amended to clarify that the testing of a variety may be concluded when the competent authority can determine with certainty the outcome of the test.

The TC agreed that the following sentence should be included as standard wording in Test Guidelines:

“The testing of a variety may be concluded when the competent authority can determine with certainty the outcome of the test.”

(ii) Procedure for the adoption of Test Guidelines by correspondence*Section 2.2 “Procedure for the Introduction of Test Guidelines”*

The TC, at its fifty-fourth session, considered document TC/54/16 “Procedure for the adoption of Test Guidelines” (see document TC/54/31 “Report”, paragraphs 217 to 220).

The TC considered the proposal for the revision of document TGP/7 “Development of Test Guidelines” to reflect the introduction of a procedure for adoption of Test Guidelines by correspondence, as set out in document TC/54/16, paragraph 14, and received presentation by the UPOV Office, a copy of which was provided as an addendum to document TC/54/16. The TC agreed that guidance in document TGP/7 should be revised to read as follows:

“2.2.7 ~~STEP 7~~ Consideration of Draft Test Guidelines by the TC-EDC

“2.2.7.1 The TC-EDC has been established by the Technical Committee to examine drafts of all Test Guidelines, produced by the TWPs, before these are put forward for adoption by the Technical Committee. The role of the TC-EDC is to ensure consistency of the Test Guidelines with the requirements of document TGP/7 and to check the alignment of texts across all the official UPOV languages. It does not conduct a substantive technical review of the Test Guidelines. The members of the TC-EDC are selected by the TC, both to provide broad experience of the UPOV system and also to represent the UPOV languages – English, French, German and Spanish. The Chairperson of the TC-EDC is provided by the UPOV Secretariat.

“2.2.7.2 The TC-EDC reviews the draft Test Guidelines, taking into account any specific instructions from the Technical Committee, and makes a recommendation on whether the Test Guidelines are suitable for adoption (Step 8). It may make a proposal to the Technical Committee for adoption subject to amendments of an editorial nature, which it specifies.

~~“2.2.7.3 If it considers that there are technical issues to be resolved, the TC-EDC may seek to resolve the issues with the Leading Expert, prior to consideration of the Test Guidelines by the Technical Committee. Where this is not possible, the TC-EDC may recommend that the Technical Committee:~~

~~(a) refer the Test Guidelines back to the TWP (Step 4) or,  
(b) adopt the Test Guidelines subject to further information being provided by the Leading Expert with the agreement of all interested experts and the Chairperson of the TWP concerned.~~

“NEW Unless otherwise agreed by the TC, the TC-EDC meets twice each year, once in the period March/April and once in conjunction with the TC session (October/November). The TC-EDC will consider Test Guidelines submitted by the Technical Working Parties at least 14 weeks prior to the TC-EDC meeting. Test Guidelines submitted less than 14 weeks prior to the TC-EDC meeting will be considered at its subsequent meeting.

“NEW The potential outcomes for Test Guidelines considered by the TC-EDC are as follows:

- (a) no changes required to the Test Guidelines, or strictly editorial changes for which recommendations are agreed by the TC-EDC; or
- (b) editorial clarifications required; or
- (c) technical issues to be resolved.

“NEW In cases where no changes are required to the Test Guidelines, or strictly editorial changes for which recommendations are agreed by the TC-EDC, the Test Guidelines will be put forward for adoption by the Technical Committee.

“NEW The following procedure applies for Test Guidelines when editorial clarifications are required:

- request for clarifications is transmitted to the Leading Expert;
- clarifications to be provided within four weeks;
- if the clarifications are agreed by the TC-EDC, the Test Guidelines will be recommended for adoption at the TC-EDC meeting;
- the Test Guidelines are considered for adoption by the TC.

“NEW The following procedure applies for Test Guidelines with technical issues to be resolved:

- technical issues to be transmitted to the Leading Expert
- the technical issues are to be addressed at the respective Technical Working Party by means of a TWP document prepared by the Leading Expert at least four weeks before TWP session (new draft Test Guidelines should not be prepared)
- resolution of the issues to be provided to the TC-EDC at least seven weeks before the TC-EDC meeting;
- if agreed by the TC-EDC, the Test Guidelines would be recommended for adoption at the TC-EDC meeting;
- Test Guidelines are considered for adoption by the TC.

#### “2.2.8 STEP 8 Adoption of Draft Test Guidelines by the Technical Committee

“2.2.8.1 The Technical Committee will, on the basis of the recommendations of the TC-EDC, decide whether to adopt the Test Guidelines, or refer them back to the TWP concerned.

“NEW The Technical Committee may adopt Test Guidelines at its session or by correspondence. Test Guidelines may be adopted by correspondence according to the following procedure:

- The draft Test Guidelines are circulated to the TC for adoption by correspondence with the recommendations by the TC-EDC;
- The draft Test Guidelines are considered as adopted if no comments are received within six weeks;
- If any comments are received, the draft Test Guidelines are referred to the relevant TWP to address those comments.

“2.2.8.2 Where the Technical Committee adopts the Test Guidelines, the Office will make all amendments agreed by the Technical Committee, which will be recorded in a report of the relevant Technical Committee meeting. The Office will then publish the adopted Test Guidelines.

~~“2.2.8.3 Where the Technical Committee adopts the Test Guidelines subject to further information being provided by the Leading Expert with the agreement of all interested experts and the Chairman of the TWP concerned (see 2.2.7.3(b)), the necessary information, agreed with all interested experts, should be provided to the Office within three months of the Technical Committee meeting, or before the subsequent session of the TWP concerned, whichever is the sooner. In those cases where the necessary information is not provided within this time, the Test Guidelines concerned will not be adopted and will be re-presented at the TWP concerned (Step 4).”~~

The TC agreed that a suitable timeline for the publication of adopted Test Guidelines should be added to the guidance. The TC will be invited to consider a proposed timeline at its fifty-fifth session, to be held in Geneva on October 28 and 29, 2019. Subject to agreement by the TC and the CAJ, the proposed timeline will be put forward for adoption by the Council, at its session to be held on November 1, 2019.

The TC agreed that the procedure for the adoption of Test Guidelines by correspondence should be incorporated in the content of the preparatory workshops for the TWPs.

ANNEX II

MATTERS FOR ADOPTION BY THE COUNCIL IN 2019: DOCUMENT TGP/8

The following revision of document TGP/8 “Trial Design and Techniques Used in the Examination of Distinctness, Uniformity and Stability” was agreed by the Technical Committee to be proposed for adoption by the Council at its fifty-third ordinary session, to be held in Geneva on November 1, 2019, subject to approval by the CAJ, at its seventy-sixth session, to be held in Geneva on October 30, 2019.

Examining DUS in Bulk Samples

*Document TGP/8: Part II: Selected techniques used in DUS examination: New Section 12: Examining characteristics on the basis of bulk samples*

The TC, at its fifty-third session, held in Geneva from April 3 to 5, 2017, agreed a list of criteria as the basis for the development of guidance for inclusion in a future revision of document TGP/8, as follows (see document TC/53/31 “Report”, paragraphs 113 to 116):

- (a) “the characteristic should fulfill the requirements of a characteristic, as set out in the “General Introduction to the Examination of Distinctness, Uniformity and Stability and the Development of Harmonized Descriptions of new Varieties of Plants” (see document TG/1/3, Section 4.2.1);
- (b) “there should be knowledge of the genetic control of the characteristic;
- (c) “the suitability of the characteristic should be validated through an initial assessment of uniformity on individual plants;
- (d) “information on plant-by-plant variation and differences between growing cycles should be provided (data from routine measurement of the characteristic from different years);
- (e) “a full description of the method of assessment should be provided;
- (f) “states of expression should be based on existing variation between varieties considering environmental influence.”

[Annex III follows]

MATTERS FOR ADOPTION BY THE COUNCIL IN 2019: DOCUMENT TGP/10

The following revision of document TGP/1 “Examining Uniformity” was agreed by the Technical Committee to be proposed for adoption by the Council at its fifty-third ordinary session, to be held in Geneva on November 1, 2019, subject to approval by the CAJ, at its seventy-sixth session, to be held in Geneva on October 30, 2019.

Assessing Uniformity by Off-Types on the Basis of More than One Growing Cycle or on the Basis of Sub-Samples

The TC, at its fifty-fourth session, considered document TC/54/20 “Assessing Uniformity by Off-Types on the Basis of More than One Growing Cycle or on the Basis of Sub-Samples” (see document TC/54/31 “Report”, paragraphs 233 and 234).

The TC agreed that the following draft guidance should be put forward for adoption by the Council for inclusion in a future revision of document TGP/10 “Examining Uniformity” to provide guidance on assessing uniformity by off-types on the basis of more than one growing cycle or on the basis of sub-samples.

New Section 4.7: Assessing Uniformity by Off-Types on the Basis of More than One Growing Cycle

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.

The following guidance is not intended to be used for the assessment of uniformity by off-types on the same plants in two growing cycles. Results from growing cycles using different lots of plant material should not be combined.

*Approach 1: Third growing cycle in the case of inconsistent results*

A variety is considered uniform if it is within the uniformity standard in both of the two growing cycles.

A variety is considered non-uniform if it fails to meet the uniformity standard in both of the two growing cycles.

If at the end of the two growing cycles the variety is within the uniformity standard in one growing cycle but is not within the uniformity standard in the other growing cycle, then uniformity is assessed in a third growing cycle. If in the third growing cycle the variety is within the uniformity standard, the variety is considered uniform. If in the third growing cycle the variety fails to meet the uniformity standard, the variety is considered non-uniform.

Care is needed when considering results that were very different in each of the growing cycles, such as when a type of off-type was observed at a high level in one growing cycle and was absent in another growing cycle. It is important to identify whether differences in number of off-types between growing cycles were due to environmental reasons or sampling variation.

Furthermore, if in the first growing cycle a variety exceeds a predefined upper limit of off-types the variety may be rejected after a single growing cycle.

*Approach 2: Combining the results of two growing cycles in the case of inconsistent results*

A variety is considered uniform if it is within the uniformity standard in both of the two growing cycles.

A variety is considered non-uniform if it fails to meet the uniformity standard in both of the two growing cycles.

If at the end of the two growing cycles the variety is within the uniformity standard in one growing cycle but is not within the uniformity standard in the other growing cycle, 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 sample size of growing cycles 1 and 2 combined.

Care is needed when considering results that were very different in each of the growing cycles, such as when a type of off-type was observed at a high level in one growing cycle and was absent in another growing cycle. A statistical test for consistency should be applied when appropriate. It is important to identify whether differences in number of off-types between growing cycles were due to environmental reasons or sampling variation.

Furthermore, if in the first growing cycle a variety exceeds a predefined upper limit of off-types the variety may be rejected after a single growing cycle.

*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 should be applied when appropriate. It is important to identify whether differences in number of off-types between growing cycles were due to environmental reasons or sampling variation.

*Example:*

Population Standard = 1%

Acceptance Probability  $\geq$  95%

Sample Size in each of growing cycles 1 and 2 = 50
Maximum number of Off-Types = 2
Sample Size in growing cycles 1 and 2 combined = 100
Maximum number of Off-Types = 3

		Growing cycle		Decision		
		First	Second	Approach 1	Approach 2	Approach 3
Number of Off-Types	1	1	uniform	uniform	uniform	
	2	2	uniform	uniform	non-uniform	
	0	3*	third growing cycle*	uniform*	uniform*	
	1	3*	third growing cycle*	non-uniform*	non-uniform*	
	1	4*	third growing cycle*	non-uniform*	non-uniform*	
	4**	1*	third growing cycle*	non-uniform*	non-uniform*	

\* Care is needed when considering results that were very different in each of the growing cycles, such as when a type of off-type was observed at a high level in one growing cycle and was absent in another growing cycle. A statistical test for consistency should be applied when appropriate. It is important to identify whether differences in number of off types between growing cycles were due to environmental reasons or sampling variation.

\*\* if in the first growing cycle a variety exceeds a predefined upper limit of off-types the variety may be rejected after a single growing cycle.

New Section 4.8: Assessing uniformity by off-types on the basis of sub-samples within a single test/trial

*Approach: Use of sub-sample as a first step of assessment*

A variety is considered uniform if the number of off-types does not exceed a predefined lower limit in the sub-sample.

A variety is considered non-uniform if the number of off-types exceeds a predefined upper limit in the sub-sample.

If the number of off-types is between the predefined lower and upper limits, the whole sample is assessed. The lower and upper limits have to be chosen considering comparable type I and type II errors in the sub-sample and the whole sample.

*Example:*

In a sample size of 100 plants, the acceptable number of off-types is 3 (based on a population standard of 1% and an acceptance probability of at least 95%).

In a subsample of 20 plants used in the context of the sample size of 100 plants above:

A variety is considered uniform if no off-types are observed in the sub-sample.

A variety is considered non-uniform if the number of off-types in the sub-sample exceeds 3.

If the number of off-types is 1 to 3, the whole sample of 100 plants is assessed.

If the number of off-types in the sample of 100 plants exceeds 3, the variety is considered non-uniform.

[Annex IV follows]

ANNEX IV

MATTERS FOR ADOPTION BY THE COUNCIL IN 2019: DOCUMENT TGP/14

The following revisions of document TGP/14 “Glossary of terms used in UPOV documents” were agreed by the Technical Committee to be proposed for adoption by the Council at its fifty-third ordinary session, to be held in Geneva on November 1, 2019, subject to approval by the CAJ, at its seventy-sixth session, to be held in Geneva on October 30, 2019.

(i) Illustrations for shape and ratio characteristics

46. The TC, at its fifty-third session, held in Geneva from April 3 to 5, 2017, agreed to revise document TGP/14: Section 2: Subsection 2: “Shapes and structures” to amend the grid for position of broadest part and width/ratio presented in Example 5, Alternative 2, to remove the wording on “ratio” and to display “relative width” in a separate column on the scale of “broad to narrow”, to read as follows (see document TC/53/31 “Report”, paragraph 141) (~~highlighting and strikethrough~~ for deletions and highlighting and underline for addition):

		←      broadest part      →				
		(below middle)	at middle	(above middle)		
relative width → narrow (high) ← broad (low)← width (ratio length/width)	 6 linear					
	 5 oblong	 8 oblongeolate	 9 spatulate			
	 1 triangular	 2 ovate	 4 elliptic	 7 obovate	 10 obtriangular	
	 3 circular					

(ii) Factors to be considered for creating color groups

47. The TC, at its fifty-fourth session, considered document TC/54/22 "Color names for the RHS Colour Chart" (see document TC/54/31 "Report", paragraph 244).

48. The TC agreed to propose the revision of document TGP/14 to include guidance on the factors to be considered for creating color groups for grouping of varieties and organizing the growing trial, as follows:

Subsection 3: Color: New Section: 5 "Factors to be considered for creating color groups"

"When using the color of a plant part for grouping of varieties, a very clear and large difference between the colors is required. However, the color groups are also used in the Technical Questionnaire for applicants who have no RHS Colour Chart. Therefore the groups need to be small enough so that applicants are able to give an adequate state of expression for the characteristic.

"The following factors have to be considered when creating color groups for grouping:

- (a) range of variation of the color of the plant part within the species
- (b) difference between colors for varieties to be considered clearly distinguishable
- (c) possible influence of the environment on the color of the plant part.

"Depending on the species and the plant part observed the color groups for grouping can be different. Examples for color groups in grouping characteristics of different Test Guidelines are listed in the following table.

Test Guidelines	Campanula (TG/305/1)	Hosta (TG/299/1)	Cordyline (TG/317/1)	Osteospermum (TG/175/5)
Characteristic	Corolla: main color of inner side	Leaf blade: color covering the largest surface area	Leaf: secondary color	Ray floret: main color of middle part
Color groups for grouping	white pink red purple purple blue	white light yellow medium yellow dark yellow light green medium green dark green blue green	white yellow green red purple brown blackish	white yellow orange pink red purple violet

"It should be emphasized that not all groups are necessarily clearly distinct from each other when information is used that does not come from the same source (same location, same observer) and cannot always be used to exclude varieties from the trial. E.g. in Cordyline for the characteristic 'Leaf: secondary color' it might not be possible to clearly distinguish between 'brown' and 'blackish' when looking at photos on the internet or in a plant catalogue."

[Annex V follows]

MATTERS FOR ADOPTION BY THE COUNCIL IN 2019: DOCUMENT TGP/15

1. The following revisions of document TGP/15 “Guidance on the use of Biochemical and Molecular Markers in the examination of Distinctness, Uniformity and Stability (DUS)” were agreed by the Technical Committee to be proposed for adoption by the Council at its fifty-third ordinary session, to be held in Geneva on November 1, 2019, subject to approval by the CAJ, at its seventy-sixth session, to be held in Geneva on October 30, 2019.

Reliability of the link between the gene and the expression of the characteristic

2. The TC, at its fifty-fourth session, agreed that the following text from document UPOV/INF/18/1 should be introduced in document TGP/15 to clarify that it was the responsibility of the authority to decide on the reliability of the link between the gene and the expression of the characteristic (see document TC/54/31 “Report”, paragraphs 272 and 273):

“3.1.4 In considering the model and example, as presented in Annex 1 of this document, the TC emphasized the importance of meeting the assumptions. In that regard, it clarified that it is a matter for the relevant authority to consider if the assumptions are met (see document TC/45/16 “Report”, paragraph 152).”

3. The TC considered the proposal by the BMT and agreed to include an explanation in document TGP/15 that it would be the responsibility of the respective TWP and the TC to assess whether the reliability of the link between the gene and the expression of the characteristic was satisfied in order to include a method in the Test Guidelines.

New model: “Genetic selection of similar varieties for the first growing cycle”

4. The TC, at its fifty-fourth session, agreed with the inclusion of a new model in document TGP/15, as follows (see document TC/54/31 “Report”, paragraphs 290 and 291):

*New Section 2.3 “Genetic Selection of Similar Varieties for the First Growing Cycle”*

2.3 Genetic Selection of Similar Varieties for the First Growing Cycle (see Annex III)

2.3.1 This approach involves a step to check for genetic similarity before the first growing cycle.

2.3.2 In cases where the minimum duration of tests is normally two growing cycles, a selection of similar varieties in the variety collection for comparison with candidate varieties in the first growing cycle is made according to genetic similarity. As a next step, the information provided by the applicant in the Technical Questionnaire (TQ) is used to see if some of the genetically similar varieties do not have to be compared in a growing trial because of differences in DUS characteristics.

2.3.3 On the basis of the variety description of DUS characteristics produced in the first growing cycle, a further search is made of varieties in the variety collection to identify any similar varieties that were not compared in the first growing cycle and which should be compared with the candidate variety in the second growing cycle.

2.3.4 Annex III to this document “Genetic Selection of Similar Varieties for the First Growing Cycle” provides an example of the genetic selection of similar varieties for the first growing cycle.

*Annex III “Model: Genetic Selection of Similar Varieties for the First Growing Cycle”*

Example: French Bean (prepared by an expert from the Netherlands)

1. Introduction

1.1 This approach involves a step to check for genetic similarity before the first growing cycle.

1.2 In cases where the minimum duration of tests is normally two growing cycles, a selection of similar varieties in the variety collection for comparison with candidate varieties in the first growing cycle is made according to genetic similarity. As a next step, the information provided by the applicant in the

Technical Questionnaire (TQ) is used to see if some of the genetically similar varieties do not have to be compared in a growing trial because of differences in DUS characteristics.

1.3 On the basis of the variety description of DUS characteristics produced in the first growing cycle, a further search is made of varieties in the variety collection to identify any similar varieties that were not compared in the first growing cycle and which should be compared with the candidate variety in the second growing cycle.

## 2. Procedure

### *Determine genetic similarity*

2.1 The DNA-profile of the candidate variety is produced as soon as plant material is received.

2.2 The DNA-profile is compared with the profiles of all varieties in the variety collection and genetically similar varieties are identified.

### *Technical Questionnaire information*

2.3 The information provided by the applicant in the Technical Questionnaire (TQ) is then used to see if there are clear differences in DUS characteristics from some of the genetically similar varieties so that they do not need to be compared with candidate varieties in a growing trial.

### *Field trial*

#### First growing cycle:

2.4 The candidate and the genetically similar varieties selected by the procedure above are grown in the same field trial. A complete description of the DUS characteristics of the candidate variety is produced and is compared to the descriptions of all varieties in the variety collection using a database containing descriptions produced at the same location in previous years.

2.5 Possible outcomes:

If the candidate variety is not distinct from the genetically similar varieties on the basis of DUS characteristics, the test will be continued for another growing cycle.

In any case, the description of the candidate variety produced in the first growing cycle is compared to the descriptions of the varieties in the variety collection using a database containing descriptions produced at the same location.

(a) If the candidate variety is found to be distinct from all varieties grown in the first growing cycle and to all other varieties in the variety collection at the end of the first growing cycle and it fulfills the uniformity and stability requirements the DUS test may be concluded after the first growing cycle.

(b) In all other cases a second growing cycle is performed.

#### Second growing cycle

2.6 In the second growing cycle, the candidate variety is grown with the all varieties in the variety collection from which it was not found to be distinct at the end of the first growing cycle.

2.7 At the end of the second growing cycle, an assessment of DUS is made. If it is not possible to reach a decision on DUS at the end of the second growing cycle, a further growing cycle may be conducted.

[Annex VI follows]

