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PROGRESS REPORT OF THE WORK OF THE TECHNICAL COMMITTEE,
THE TECHNICAL WORKING PARTIES AND THE WORKING GROUP ON BIOCHEMICAL AND
MOLECULAR TECHNIQUES, AND DNA-PROFILING IN PARTICULAR

prepared by the Office of the Union

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EXECUTIVE SUMMARY

1. This document presents a progress report of the work of the Technical Committee (TC) and its Technical Working Parties (TWPs), including the Working Group on Biochemical and Molecular Techniques, and DNA-Profiling in Particular (BMT).

2. The Council will be invited to:

(a) note the work of the TC and that of the TWPs and BMT reported to the TC, as provided in this document; and

(b) approve the work of the TC and the work programs of the TWPs and BMT reported to the TC, as provided in this document.

3. The following abbreviations are used in this document:

CAJ:	Administrative and Legal Committee
TC:	Technical Committee
TC-EDC:	Enlarged Editorial Committee
TWPs:	Technical Working Parties
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
BMT:	Working Group on Biochemical and Molecular Techniques, and DNA-Profiling in Particular
DUS:	Distinctness, Uniformity and Stability
Office:	Office of the Union

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PROGRESS REPORT OF THE WORK OF THE TECHNICAL COMMITTEE

4. The Technical Committee (TC) held its fifty-first session in Geneva from March 23 to 25, 2015, chaired by Mr. Alejandro Barrientos Priego (Mexico), Chairman of the TC. The report of the session is contained in document TC/51/39 "Report".

5. The meeting was attended by 80 participants from 44 members of the Union, 1 observer State and 7 observer organizations.

Report on developments in UPOV including relevant matters discussed in the last sessions of the Administrative and Legal Committee, the Consultative Committee and the Council (oral report by the Vice Secretary-General)

6. The TC considered document TC/51/10 and received an oral report by the Vice Secretary-General.

7. The TC noted the developments in UPOV including relevant matters discussed in the last sessions of the Administrative and Legal Committee, the Consultative Committee and the Council, as set out in paragraphs 3 to 35 of document TC/51/10.

8. The Delegation of Spain reported that, in Spain, the UPOV distance learning courses were being used for the training of government officials outside of the PVP Office, such as the police and border control agents. The Vice Secretary-General welcomed the report from Spain and recalled that the UPOV distance learning courses were free for government officials of members of the Union that were nominated by the relevant representative to the UPOV Council. He also expressed his thanks to the experts from members of the Union that voluntarily acted as tutors in the UPOV distance learning courses, without which it would not be possible to operate the distance learning courses on such a basis.

Matters arising from the Technical Working Parties

9. The TC considered document TC/51/3 and noted the developments in the TWPs concerning:

- (a) Duration of DUS tests in the fruit sector;
- (b) Use of disease resistance characteristics in DUS examination;
- (c) Data loggers;
- (d) Experiences with new types and species;
- (e) Management of variety collections for DUS examination; and
- (f) Use of statistical approaches in DUS examination

10. The TC noted that the Community Plant Variety Office (CPVO) of the European Union would make a presentation on the results of a study to assess the possible effects of endophyte infection in ryegrass and tall fescue on the expression of DUS characteristics to the TWA in 2016. The TC also noted that experts from the European Union would collate the options developed by the leading experts and seek to develop possible new standard wording options for the minimum period of DUS testing and the number of growing cycles for some fruit Test Guidelines. The European Union suggested that this would be a useful exercise in other TWPs as well.

TGP documents

Matters for adoption by the Council in 2015

TGP/0: List of TGP Documents and Latest Issue Dates

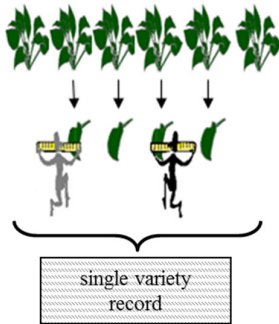
11. The TC considered document TC/51/5 "TGP Documents" and noted that the Council would be invited to adopt document TGP/0/8, in order to reflect the adoption of TGP documents.

TGP/9: Examining Distinctness

12. The TC noted the new section on "Guidance on number of plants to be examined (for Distinctness)" already agreed by the TC for document TGP/9, as set out in Annex I to document TC/51/5.

13. The TC considered document TC/51/23 and the proposals of the following sections of TGP/9:
- (i) Revision of document TGP/9: Section 1.6: Schematic Overview of TGP Documents Concerning Distinctness
14. The TC agreed that the flow diagram in TGP/9, Section 1.6 “Schematic overview of TGP documents concerning distinctness”, should be revised as set out in Annexes I and II to document TC/51/23.
- (ii) Revision of document TGP/9: Section 2.5: Photographs
15. The TC considered the proposed guidance on photographs for inclusion in document TGP/9, Section 2.5 “Photographs”, and agreed the guidance to read as follows:
- “2.5.3 The suitability of photographs for the identification of similar varieties is strongly influenced by the quality of the photographs taken by the authority for the varieties in the reference collection and the photograph of the candidate variety provided by the applicant with the Technical Questionnaire. Comprehensive guidance for taking suitable photographs is provided in document TGP/7, GN 35. The guidance was developed in particular for the applicants to provide suitable photographs of the candidate variety. The same instructions are important and useful for the authorities to take photographs of the varieties in the variety collection under standardized conditions.”
16. The TC noted that editorial changes needed to be made to the draft text in German and recalled that the language experts of the editorial committee would be requested to check the translations in French, German and Spanish of all documents before they were prepared for adoption by the Council.
17. The German translation should read as follows:
- „2.5.3 Die Eignung von Fotos für die Identifikation ähnlicher Sorten wird durch die Qualität der von der Behörde für die Sorten in der Sortensammlung erstellten Fotos und der vom Antragsteller zusammen mit dem Technischen Fragebogen eingereichten Fotos stark beeinflusst. Eine ausführliche Anleitung für die Aufnahme geeigneter Fotos wird in Dokument TGP/7, GN 35, erteilt. Die Anleitung wurde insbesondere für die Antragsteller ausgearbeitet, damit sie geeignete Fotos der Kandidatensorte einreichen. Dieselben Anweisungen sind auch für die Behörden wichtig und zweckdienlich, um Fotos der Sorten in der Sortensammlung unter genormten Bedingungen zu erstellen.“
- (iii) Revision of document TGP/9: Sections 4.3.2 “Single record for a group of plants or parts of plants (G)” and 4.3.4 “Schematic summary”
18. The TC considered the proposed example of a single record for a group of plants (MG) taken on plant parts for inclusion in document TGP/9, Section 4.3.2 “Single record for a group of plants or parts of plants (G)” and Section 4.3.4 “Schematic Summary”, and agreed the guidance to read as follows:
- “Example (MG)
- “Measurement (MG): ‘Leaf blade: width’ in Hosta (vegetatively propagated): a representative measurement in the plot.”
19. The TC agreed that the illustration for inclusion in Subsection 4.3.4, should be amended to appear as follows:

Section 4.3.2.3
Example (MG): Leaf blade:
width
(hosta: vegetatively
propagated)



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

(i) Section 2.4: "Apex/tip shape characteristics"

20. The TC considered the revision of document TGP/14 Section 2.4 as presented in document TC/51/25 and agreed that the wording should read as follows:

"2.4 Apex/Tip Shape Characteristics

"2.4.1 The APEX (apical or distal part) of an organ or plant part is the end furthest from the point of attachment. In some cases, the distal extremity of the apex may be differentiated into a 'TIP'.

"2.4.2 In considering the approach to describe the apex, the size of the organ and the number of apex shapes should be taken into account. Apex characteristics can be described in simple terms and if a differentiated tip is present it could be further described as a separate characteristic. Generally, it is not necessary to separate the apex shape characteristic into differentiated tip and apex characteristics.

"2.4.3 In cases where it is appropriate to separate into differentiated tip and apex characteristics, the shape of the apex is taken as the general shape, excluding any differentiated tip (if present) and the separation of tip and apex should be indicated in the explanation of the characteristic. For example:

[...]"

21. The TC noted that editorial changes needed to be made to the draft text in German and recalled that the language experts of the editorial committee would be requested to check the translations in French, German and Spanish of all documents before they were prepared for adoption by the Council.

22. The German translation should read as follows:

„2.4 Merkmale für die Form des Apex/der Spitze

2.4.1 Der APEX (apikaler oder distaler Teil) eines Organs oder eines Pflanzenteils ist das am weitesten von der Ansatzstelle entfernte Ende. In einigen Fällen kann das distale Ende des Apex in eine ‚AUFGESETZTE SPITZE‘ differenziert sein.

2.4.2 Die Vorgehensweise zur Beschreibung des Apex sollte die Größe des Organs und die Anzahl der Formen für den Apex berücksichtigen. Die Merkmale für den Apex lassen sich in einfachen Begriffen beschreiben. Wenn eine differenzierte Spitze vorhanden ist, könnte diese als getrenntes Merkmal näher beschrieben werden. In der Regel ist es jedoch nicht notwendig, die Merkmale für die Apex-Form in aufgesetzte Spitze und Apex aufzuteilen.

2.4.3 Wenn es angebracht ist, differenzierte Spitze und Apex in getrennte Merkmale aufzuteilen, wird die Form des Apex als allgemeine Form, ohne differenzierte Spitze (sofern vorhanden), angenommen, und die Aufteilung von aufgesetzter Spitze und Apex sollte in der Erläuterung des Merkmals angegeben werden, beispielsweise:

[...]"

(ii) Subsection 3: "Color"

23. The TC noted the correction to the French translation of the color group "dark purple red" to read "rouge pourpre foncé" in document TGP/14 Subsection 3: "Color".

Future Revision of TGP Documents

TGP/7: Development of Test Guidelines

(i) Revision of document TGP/7: Drafter's Kit for Test Guidelines

24. The TC agreed that a detailed proposal for a revision of document TGP/7 be presented to the TWPs, at their sessions in 2015 to reflect the introduction of the web-based TG Template.

(ii) Revision of document TGP/7: Plant Material Submitted for Examination

25. The TC noted the information provided in document TC/51/14 Rev.

26. The TC agreed that it would not be necessary to develop further guidance to address issues relating to plant material submitted for examination beyond that already provided in documents TG/1/3 "General Introduction to the Examination of Distinctness, Uniformity and Stability and the Development of Harmonized Descriptions of new Varieties of Plants", TGP/7 "Development of Test Guidelines" and TGP/9 "Examining Distinctness".

27. The TC agreed that authorities should provide guidance on the requirements of material submitted for DUS examination to the avoid possible effect of the method of propagation (e.g. micropropagation) in the expression of DUS characteristics.

(iii) Revision of document TGP/7: Coverage of the Test Guidelines

28. The TC considered document TC/51/15.

29. The TC agreed with the proposal to amend document TGP/7 to add new standard wording in the TG template, Chapter 4.2 "Uniformity", and amend ASW 8 (c) to provide guidance for Test Guidelines that are developed on the basis of varieties with one type of propagation when varieties may be developed in the future with other types of propagation, as follows:

"New standard wording: TG template, Chapter 4.2:

"These Test Guidelines have been developed for the examination of [*type or types of propagation*] varieties. For varieties with other types of propagation the recommendations in the General Introduction and document TGP/13 'Guidance for new types and species', Section 4.5: 'Testing Uniformity' should be followed."

"ASW 8 (c)

"(c) *Uniformity assessment by off-types (all characteristics observed on the same sample size)*

"For the assessment of uniformity of [self-pollinated] [vegetatively propagated] [seed-propagated] varieties, a population standard of { x } % and an acceptance probability of at least { y } % should be applied. In the case of a sample size of { a } plants, [{ b } off-types are] / [1 off-type is] allowed."

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

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

30. The TC considered document TC/51/16 and the draft guidance for inclusion in document TGP/8 on minimizing the variation due to different observers of the same trial, as reproduced in the Annex to document TC/51/16, in conjunction with the comments of the TWPs at their sessions in 2014.

31. The TC agreed to request the expert from Australia to continue developing the document to be presented to the TWPs at their sessions in 2015, and to amend the title to that used in the Annex to document TC/51/16 “Minimizing the variation due to different observers of the same trial”.

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

32. The TC considered document TC/51/17 on developments concerning the method of calculation of COYU and a practical exercise using real data to compare decisions made using the current and the proposed improved method.

33. The TC noted that 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

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

35. The TC 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.

36. The TC 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.

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

37. The TC considered document TC/51/18.

38. The TC agreed to request the experts from the Netherlands to provide further information on the routine measurement of glycoraphanin content, as presented in the Annex to document TC/51/18.

39. The TC 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, as presented in the Annex to document TC/51/18.

40. The TC 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 invited the TWPs to propose alternative approaches for the examination of uniformity. In that regard, it proposed that the previous work of the TWC, on the use of sub-samples, be reviewed as a starting point.

41. The TC agreed to consider further 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.

42. The TC agreed that the determination of states of expression should be based on existing variation between varieties and considering environmental influence.

43. The TC welcomed the offer of France to provide other examples of characteristics based on bulk samples and invited other members to provide examples.

- (iv) 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

44. The TC noted the information provided in document TC/51/19.

45. The TC welcomed the proposal made by the TWC, as presented in paragraph 32 of document TC/51/19, 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.

46. The European Union reported that the project on a ring test on Apple for the management of variety description to be launched in 2015 had been suspended because of the high costs involved..

- (v) Revision of document TGP/8: Part II: Selected Techniques Used in DUS Examination, New Section: Guidance for Blind Randomized Trials

47. The TC considered document TC/51/20.

48. The TC noted that blind randomized trials were not routinely used and agreed that the existing guidance in documents TGP/8: Part I: "DUS trial design and data analysis" and TGP/9 "Examining distinctness" was sufficient to address the matter.

- (vi) Revision of document TGP/8: Part II: Selected Techniques Used in DUS Examination, New Section: Examining Characteristics Using Image Analysis

49. The TC considered document TC/51/21 and the proposed draft guideline on "Examining Characteristics Using Image Analysis", as presented in the Annex to document TC/51/21, in conjunction with the comments made by TC-EDC at its meeting in 2015, as set out in paragraph 16 of document TC/51/21.

50. The TC agreed with the proposed guidance on "Examining Characteristics Using Image Analysis", subject to the following amendments:

Annex, paragraph 5	to add "in cases where image analysis is automated" at the end of the first sentence
Annex, paragraph 14	to delete heading above paragraph
Annex, paragraph 18	to read "RHS colour chart"
Annex, paragraph 19	to be deleted
Annex, paragraph 20	to replace "home-made" by "in-house"
Annex, paragraph 22	to read "...possible to use it for a wider range of <u>standard UPOV</u> characteristics in future."

- (vii) Revision of document TGP/8: Part II: Selected Techniques Used in DUS Examination, New Section: Statistical Methods for Visually Observed Characteristics

51. The TC considered document TC/51/22.

52. The TC encouraged members of the Union to present to the TWPs the ways in which they intended to use the new statistical method for visually observed characteristics in DUS examination.

53. The TC agreed to remove the document "Statistical methods for visually observed characteristics" from the program for the revision of document TGP/8 for the time being, and to consider the matter under a separate agenda item.

54. The TC noted that an expert from China had been invited to make a presentation at the next session of the TWC on the analysis of visually observed characteristics using the DUST China (DUSTC) software package using the data set of meadow fescue provided by Finland.

TGP/10: Examining uniformity

Revision of document TGP/10: New section: Assessing Uniformity by Off-Types on Basis of More than One Sample or Sub-Samples

55. The TC considered document TC/51/24.

56. The TC agreed with the proposals made by the TWPs at their sessions in 2014 and the TC-EDC at its meeting in January 2015, on the draft guidance for inclusion in a future revision of document TGP/10, as presented in Annexes I to IV to document TC/51/24.

57. The TC agreed that the title of the document should be amended to read: "Assessing uniformity by off-types on basis of more than one growing cycle or on the basis of sub-samples";

58. The TC agreed that situations A and B as presented in Annexes I and II to document TC/51/24 should be combined, with an explanation that 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

59. The TC agreed to invite members of the Union to present to the TWPs and the TC information on the risks, benefits, cost implications and other relevant aspects in their choice of Approach 1 and 2 when assessing uniformity by off-types on basis of more than one sample or sub-sample, as set out in Annexes I and II to document TC/51/24.

60. The TC agreed to clarify the possibility to reject a variety on the basis of a lack of uniformity after a single growing cycle. It further agreed to review the fifth example to be more realistic, given that a variety with 10 off-types in the first growing cycle would probably be rejected after the first growing cycle.

Possible future revision of TGP documents

TGP/5: Experience and cooperation in DUS testing

- (i) Revision of document TGP/5: Section 3: Technical Questionnaire to be Completed in Connection with an Application for Plant Breeders' Rights

61. The TC agreed that document TGP/5: Section 3 should read as follows:

"A model Technical Questionnaire is provided in document TGP/7 'Development of Test Guidelines': Annex 1: TG Template: Chapter 10. The UPOV Test Guidelines (http://www.upov.int/edocs/tgpdocs/en/tgp_7.pdf) contain, in Chapter 10, a specific Technical Questionnaire for varieties covered by those Test Guidelines."

- (ii) Revision of document TGP/5: Section 8: Cooperation in Examination

62. The TC agreed that document TGP/5: Section 8 should read as follows:

"A synopsis of cooperation in examination between authorities is provided in the form of a Council document:

"C/[session]/5 (e.g. C/49/5), (http://www.upov.int/meetings/en/topic.jsp?group_id=251)."

- (iii) Revision of document TGP/5: Section 9: List of Species in which Practical Knowledge has been Acquired or for which National Test Guidelines have been Established

63. The TC agreed that document TGP/5: Section 9 should read as follows:

"A list of genera and species in which practical knowledge has been acquired or for which national test guidelines have been established is provided in the Technical Committee document:

"TC/[session]/4 (e.g. TC/51/4), (http://www.upov.int/meetings/en/topic.jsp?group_id=254).

TGP/7: Development of Test Guidelines

- (i) Use of proprietary photographs and illustrations in Test Guidelines

64. The TC agreed that guidance for drafters of Test Guidelines should be developed in relation to text, photographs or illustrations that could be subject to third party rights.

- (ii) Regional sets of example varieties

65. The TC agreed that guidance should be developed on the term "region" and the basis for selecting example varieties in a region in relation to the establishment of regional sets of example varieties for Test Guidelines.

TGP/14: Glossary of terms used in UPOV documents

(i) Definition of color groups from RHS Colour Charts

66. The TC agreed to invite members of the Union to present to the TWPs, at their sessions in 2015, how varieties were allocated to color groups.

67. The TC also agreed that representatives of the Royal Horticultural Society (RHS) should be invited to participate in discussion on this matter during the next session of the TWO, to be held in Cambridge, the United Kingdom, in 2015, with a view to possible harmonization on terminology.

68. The TC agreed that discussions on this matter should be under a separate agenda item, outside the context of revision of document TGP/14.

Program for the development of TGP documents

69. The TC agreed the program for the development of TGP documents, as set out in the Annex II to document TC/51/5, subject to its conclusions above.

Molecular techniques

Discussion on molecular techniques

70. The TC received the following presentations on molecular techniques (in order of presentation):

Reports on developments in UPOV Concerning Biochemical and Molecular Techniques	UPOV Office
Marker-Assisted Selection of "Similar Variety" in DUS Testing	Republic of Korea (Mr. Seung-In Yi)
The Use of Reference Varieties in Varietal Distinctness: An Approach under Investigation in the United States of America for Potential Application in Plant Variety Protection	United States of America (Mr. Paul Nelson)
A European Potato Database as Centralized Collection of Varieties of Common Knowledge	United Kingdom (Mr. Alex Reid)
Development of EST-SSR Markers of Lettuce and Application for Variety Identification	Republic of Korea (Mr. Seung-In Yi)
Ownership and Use of DUS Samples and of DNA and DNA Data During and After the DUS Tests	Netherlands (Mr. Kees van Ettehoven)
Existing Areas of Cooperation Between OECD, UPOV and ISTA	UPOV Office

71. The TC noted that a copy of the presentations would be made available on the UPOV website.

72. The TC considered document TC/51/11 Rev. "Molecular techniques".

73. The TC noted the report on developments in the TC, TWPs and BMT, as set out in paragraphs 4 to 22 of document TC/51/11 Rev.

74. The TC approved the program for the fifteenth session of the BMT, to be held in 2016, including the dedication of a particular date ("Breeders' Day"), for the items on the use of molecular techniques in the consideration of essential derivation and in variety identification, as set out in paragraph 22 of document TC/51/11 Rev.

75. The TC agreed to develop a joint document explaining the principal features of the systems of OECD, UPOV and ISTA (e.g. DUS, variety identification, variety purity, etc.), subject to the approval of the Council and in coordination with OECD and ISTA.

76. The TC noted that the OECD/UPOV/ISTA Joint Workshop on Molecular Techniques had agreed that it would be useful to repeat the joint workshop at relevant meetings of the OECD and ISTA and, in that regard, that the Technical Working Group Meeting of the OECD Seed Schemes, had agreed that another OECD/UPOV/ISTA Joint Workshop on Molecular Techniques should be organized either back-to-back with the Annual Meeting of the OECD Seed Schemes, to be held in Paris, in June, 2015, or in conjunction with the Technical Working Group Meeting to be held in January, 2016.

77. The TC agreed to develop an inventory on the use of molecular marker techniques, by crop, with a view to developing a joint OECD/UPOV/ISTA document containing that information, in a similar format to UPOV document UPOV/INF/16 "Exchangeable Software", as set out in paragraph 26 of document TC/51/11, subject to the approval of the Council and in coordination with OECD and ISTA. It agreed that it would be necessary to establish criteria and a process for information to be added to the document.

78. The TC agreed that the BMT, at its fifteenth session, should develop lists of possible joint initiatives with OECD and ISTA in relation to molecular techniques, for consideration by the TC.

79. The TC considered the development of a draft question and answer concerning the information on the situation in UPOV with regard to the use of molecular techniques for a wider audience, including the public in general. The TC agreed to request the TWPs, at their sessions in 2015, to consider the following initial draft discussed during the TC session:

"Is it possible to obtain protection of a variety on the basis of its DNA-profile?"

"For a variety to be protected, it needs to be clearly distinguishable from all existing varieties on the basis of characteristics that are physically expressed, e.g. plant height, time of flowering, fruit color, disease resistance etc. [Molecular techniques (DNA profiles) may be used as supporting information]."

"A more detailed explanation is provided in the FAQ 'Does UPOV allow molecular techniques (DNA profiles) in the examination of Distinctness, Uniformity and Stability ("DUS")?'"

"See also:

"What are the requirements for protecting a new plant variety?"

Variety denominations

80. The TC considered document TC/51/12.

81. The TC noted the work on the possible development of a UPOV similarity search tool for variety denomination purposes by the Working Group for the Development of a UPOV Denomination Similarity Search Tool (WG-DST), including the test study, as set out in paragraphs 4 to 15 of document TC/51/12. The TC also noted that the result of the test study would be reported to the second meeting of the WG-DST and the most effective search tool would be described and documented.

82. The TC noted the proposed revision of document UPOV/INF/12 in relation to changes of registered variety denominations, as set out in paragraph 20 of document TC/51/12, and that, subject to agreement by the CAJ, that revision would be proposed for adoption by the Council at its forty-ninth ordinary session, to be held on October 28, 2015.

83. The TC noted that the CAJ, at its seventy-first session, may invite the WG-DST to consider the comments by the CAJ-AG, at its ninth session, on the proposals in document UPOV/INF/12/5 Draft 2 concerning Sections 2.2.2 (b), 2.3.1 (c) and (d), and 2.3.3, as set out in paragraph 26 of document TC/51/12.

84. The TC noted that the CAJ, at its seventy-first session, may suggest that the proposals of the CAJ-AG under Sections 2.2.2 (c), 4 (a) and 4 (e)(i) be considered by the CAJ, at its seventy-second session, as set out in paragraph 27 document TC/51/12.

85. The Delegation of Argentina reported that it was conducting a study on variety denominations that would be presented to the CAJ at its session on October 2015.

Information and databases

(a) *UPOV information databases*

86. The TC considered document TC/51/6.

GENIE database

Information on type of crop

87. The TC noted the information on allocation of crop type(s) for UPOV codes currently used in the PLUTO database, as set out in paragraphs 12 and 13 of document TC/51/6.

88. The TC noted that information on crop type(s) would be introduced in the GENIE database and the GENIE database would be modified to show the crop type(s) for each UPOV Code by the end of March 2015.

89. The TC noted that a standard report for TWP allocations for UPOV codes would be introduced on the GENIE webpage by the end of March 2015.

90. The TC agreed that the Office of the Union would prepare tables of allocation of crop type(s) for UPOV codes used in the PLUTO database for the first time for checking by the relevant authorities, for each of the TWP sessions in 2015.

UPOV code system

91. The TC considered the developments concerning UPOV codes, as set out in document TC/51/6, paragraph 17. The TC noted that in 2014, 577 new UPOV codes had been created and amendments made to 37 existing UPOV codes. The TC also noted that the total number of UPOV codes in the GENIE database at the end of 2014 was 7,808.

92. The TC agreed that the Office of the Union would prepare tables of UPOV codes additions and amendments, for checking by the relevant authorities, for each of the TWP sessions in 2015, as set out in document TC/51/6, paragraph 18.

PLUTO database

93. The TC noted the summary of contributions to the PLUTO database from 2012 to 2014 and the current situation of members of the Union on data contribution, as presented in document TC/51/6, Annex II.

94. The TC noted that the number of submissions to the PLUTO database in Annex II to document TC/51/6 did not include all of the submissions made by the CPVO during transitional arrangements for online uploading of data and noted that the Office would provide a corrected version of Annex II.

95. The TC noted that an additional column in the PLUTO search screen, showing the date on which the information was provided, would be introduced by the end of March 2015.

96. The TC agreed to make both the "Denomination" and "Breeder's Ref" fields searchable, independently or in combination, by denomination search tools on the "Denomination Search" page of the PLUTO database, as set out in document TC/51/6, paragraphs 28 and 29, and noted that the conclusions of the TC on that matter would be reported to the CAJ at its seventy-first session, to be held in Geneva, on March 26, 2015.

97. The TC noted the information concerning the training course "Contributing data to the PLUTO database", held in Geneva in December 2014, as set out in document TC/51/6, paragraphs 31 to 34, and the plans to organize three further courses, in English, French and Spanish, in 2015.

(b) *Electronic application systems*

98. The TC considered document TC/51/7 "Electronic Application Systems".

99. The TC noted the developments concerning the development of a prototype electronic form as set out in document TC/51/7.

100. The European Union requested additional time to provide comments on the development of the prototype electronic form. The UPOV Office clarified that all comments received could be addressed in the subsequent versions of the prototype and invited all UPOV members and breeders to join the project.

(c) *Exchangeable software*

101. The TC considered document TC/51/8.

Document UPOV/INF/16 "Exchangeable Software"

Revision of document UPOV/INF/16

102. The TC noted that the Council, at its forty-eighth ordinary session, held in Geneva, on October 16, 2014, had adopted the revision of document UPOV/INF/16 "Exchangeable Software" (document UPOV/INF/16/4).

Software proposed for inclusion in document UPOV/INF/16 "Exchangeable software"

103. The TC noted that the discussions on the inclusion of the SISNAVA software in document UPOV/INF/16 would be continued in the TWC, subject to the conclusion on discussions on the variation of variety descriptions over years in different locations.

Information on use by members

104. The TC approved the revision of document UPOV/INF/16/4 concerning the inclusion of information on the use of software by members of the Union, as set out in Annex I to document TC/51/8.

105. The TC noted that the comments of the TC, at its fifty-first session, concerning the use of software by members of the Union, would be reported to the CAJ at its seventy-first session, to be held in Geneva on March 26, 2015, and if agreed by the CAJ, a draft document UPOV/INF/16/5 would be presented for adoption by the Council at its forty-ninth ordinary session, to be held on October 29, 2015.

Document UPOV/INF/22 "Software and Equipment used by members of the Union"

Adoption of document UPOV/INF/22/1

106. The TC noted that the Council, at its forty-eighth ordinary session, held in Geneva, on October 16, 2014, had adopted document UPOV/INF/22/1 "Software and equipment used by members of the Union".

Software/Equipment proposed for inclusion in document UPOV/INF/22

107. The TC agreed the information in Annex II to document TC/51/8 for inclusion in document UPOV/INF/22, subject to corrections to be provided by Germany and to checking of the data provided by Uruguay.

108. The TC noted that, subject to agreement by the TC at its fifty-first session, the comments of the TC concerning the use of software by members of the Union would be reported to the CAJ at its seventy-first session, and if agreed by the CAJ, a draft of document UPOV/INF/22/2 will be presented for adoption by the Council at its forty-ninth ordinary session, to be held on October 29, 2015.

(d) *Variety description databases*

109. The TC considered document TC/51/9 "Variety description databases".

110. The TC noted the developments on variety description databases, as set in document TC/51/9 and, in particular, that:

- (a) the TWO agreed that it would not be appropriate to develop a database for an ornamental species at this time; and

- (b) the TWC had invited an expert from China to present the analysis of variance for the interaction “variety x location” (environment) of the QN characteristics considered in the study using the statistical module of the new software “DUSTC” developed by China for presentation at its thirty-third session.

111. The TC noted the importance of databases for UPOV members and agreed that it would be useful to include a discussion item on facilitating the development of databases at the fifty-second session of the Technical Committee.

Matters concerning variety descriptions

112. The TC considered document TC/51/38 “Matters concerning variety descriptions”.

Verifying the maintenance of the variety

113. The TC agreed to invite experts to present to the TWPs, at their sessions in 2015, their experiences with regard to the use of information, documents or material provided by the breeder for verifying the maintenance of the variety and the use of versions of Test Guidelines for verifying the maintenance of the variety that were different from the version of the Test Guidelines used for the examination of DUS.

Matters concerning variety descriptions

114. The TC noted the existence of different approaches for generating variety descriptions and verifying the maintenance of varieties in different UPOV members and under different DUS testing systems.

115. The TC noted the information in document TC/51/38, paragraphs 9 to 12, in relation to the matters concerning variety description presented in document TC/51/38, paragraph 8.

116. The TC agreed to invite experts to present to the TWPs, at their sessions in 2015, how variety descriptions were generated in DUS examination, how were they used after the granting of a breeders' right and how variety maintenance was verified. In particular, the TC noted the possible impact of the interaction genotype x environment in generating the variety description.

117. The TC agreed that experts should also be invited to present to the TWPs, at their sessions in 2015, the role of the plant material used as basis for the DUS examination in relation to matters presented in document TC/51/38, paragraph 8.

Discussion on possible ways of improving the effectiveness of the Technical Committee, Technical Working Parties and Preparatory Workshops

118. The TC considered document TC/51/37 “Possible ways of improving the effectiveness of the Technical Committee, Technical Working Parties and Preparatory Workshops” and received a presentation by the UPOV Office.

119. The TC noted the participation in the survey of participants at the TWP sessions in 2014, as presented in document TC/51/37, paragraph 20.

120. The TC noted the results of the surveys in 2014, presented in document TC/51/37, Annex I.

121. The TC noted the comments made by the TWPs at their sessions in 2014 on proposals that could imply cost or timing changes, as presented in document TC/51/37, Annex II.

122. The TC agreed with the following proposals concerning possible means of improving the effectiveness of the TWPs, as set out in document TC/51/37, paragraph 24:

GENERAL

To be more specific for each TWP, e.g.:

- Technical visit,
- Matters to be discussed,
- Workplan (e.g. time allocated for TGPs vs. TGs)

To Update document: "Guidance Note: UPOV Technical Working Party arrangements" (meeting arrangement and technical visit):

- Name badges
- Participant lists on large poster board
- Notice board for announcement

To review the document: "Guidance Note: UPOV Technical Working Party arrangements" and include the key points in a cover letter (e.g. encourage national workshop in conjunction with the session to take advantage of international experts presence in the country; indicate earliest date for the first TWP to be organized after the TC)

To announce the next TWP venue on the first day of the session so participants have sufficient time to reflect on suggestion for the agenda and the technical visit (invite the host to explain the intended program, e.g. technical visit)

To introduce a session for open discussion in a similar way to the session in the TC

WORKPLAN

To circulate the proposed TWP schedule of the week in advance

To provide links to the documents in the program of the week on the UPOV website

DOCUMENTS

Decision paragraph to be continued in TWP documents

Executive summary to be added to TWP documents

TEST GUIDELINES

To add information on the responsible TWP for Test Guidelines on the UPOV website

To consider a multi-annual working plan for Test Guidelines

PREPARATORY WORKSHOP

To invite/ encourage experienced experts from members of the Union to participate in the preparatory workshop

To organize small groups of participants with different levels of experience for the group exercises (as far as practical)

To renew exercises for the preparatory workshops on a regular basis

To organize E-workshops and workshop in conjunction with preparatory workshop on the use of the Web-based TG template, and guidance on the presentation of Test Guidelines at the sessions

Pre-recorded e-workshops to be made available on the website

123. The TC agreed that the following proposals should not be considered further:

Survey in 2015
Change in the invitation and its distribution
Presentation of documents (already improved since 2014)
Request for participants to provide their comments in advance for TGP documents
Separate annual meeting to discuss TGP documents
Change on the day of the preparatory workshop (Sunday)

Preparatory workshops

124. The TC considered document TC/51/13 "Preparatory Workshops".

125. The TC noted the report of the preparatory workshops held in 2014.

126. The TC agreed the program for preparatory workshops for 2015, as set out in paragraphs 10 and 11 of document TC/51/13.

Test Guidelines

127. The TC considered documents TC/51/2, TC/51/26, TC/51/27, TC/51/28, TC/51/29, TC/51/30, TC/51/31, TC/51/32, TC/51/33, TC/51/34 and TC/51/35.

128. According to the procedures established in document TGP/7, the TC adopted 12 new Test Guidelines for the Conduct of Tests for Distinctness, Uniformity and Stability, five revised Test Guidelines and nine partially revised Test Guidelines, as listed in the table below, on the basis of the amendments specified in Annex II to this document and the linguistic changes recommended by the TC-EDC and agreed that they should be published on the UPOV website at the earliest opportunity:

**	TWP	Document No. No. du document Dokument-Nr. No del documento	English	Français	Deutsch	Español	Botanical name
<u>NEW TEST GUIDELINES / NOUVEAUX PRINCIPES DIRECTEURS D'EXAMEN / NEUE PRÜFUNGSRICHTLINIEN / NUEVAS DIRECTRICES DE EXAMEN</u>							
NZ	TWF	TG/ACCA(proj.5)	Feijoa, Pineapple Guava, Guavasteen	Feijoa	Feijoa	Feijoa	Acca sellowiana (Berg) Burret
JP	TWA	TG/ADZUK (proj.4)	Adzuki Bean; Azuki Red Bean; Chinese Red Bean	Haricot Adzuki	Adzukibohne	Judía adzuki	Vigna angularis (Willd.) Ohwi & H. Ohashi, Phaseolus angularis (Willd.) W. Wight
ZA	TWO	TG/ALOE(proj.5)	Aloe	Aloès	Aloe	Aloe, Sabila	Aloe L.
JP	TWO	TG/CALSP (proj.5)	China Aster, Annual Aster	Aster; Aster de Chine; Reine- marguerite	Sommeraster	Aster de China	Callistephus chinensis (L.) Nees
GB	TWO	TG/CAMPA (proj.6)	Campanula, Bell Flower	Campanule	Glockenblume	Campánula	Campanula L.
KE/ BR	TWA/ TWV	TG/CASSAV (proj.6)	Cassava	Manioc	Maniok	Mandioca, Yuca	Manihot esculenta Crantz
JP	TWA	TG/COIX(proj.6)	Adlay, Job's tears	Larmes de Job	Hiobsträne	Lágrimas de San Pedro	Coix lacryma-jobi L.
JP	TWO	TG/COSMOS (proj.8)	Cosmos	Cosmos	Kosmee, Schmuckkörbchen	Mirasol, Cosmos	Cosmos Cav.
FR	TWV	TG/CUCUR_MM (proj.4)	Cucurbita maxima X Cucurbita moschata	Cucurbita maxima X Cucurbita moschata	Cucurbita maxima X Cucurbita moschata	Cucurbita maxima X Cucurbita moschata	Cucurbita maxima Duch. x Cucurbita moschata Duch.
FR	TWV	TG/LAGEN (proj.5)	Bottle Gourd; Calabash; Calabash Gourd; White- flower Gourd	Calebassier; Gourde bouteille	Flaschenfrucht; Flaschenkürbis; Gewöhnlicher Flaschenkürbis	Acocote; Cajombre; Calabaza; Guiro amargo	Lagenaria siceraria (Molina) Standl.
MX	TWF	TG/PECAN (proj.12)	Pecan Nut	Noix de pécan	Pekan, Pekannuß	Nuez pecán, Pecan, Nogal pecanero	Carya illinoensis (Wangenh.) K. Koch

**	TWP	Document No. No. du document Dokument-Nr. No del documento	English	Français	Deutsch	Español	Botanical name
BR	TWA	TG/UROCH (proj.9)	Bread Grass, Palisade Grass, Palisade Signal Grass, Signal Grass; Basilisk Signal Grass, Signal Grass, Spreading Liverseed Grass, Surinam Grass; Creeping Signal Grass, Koronivia Grass; Congo Grass, Congo Signal Grass, Ruzi Grass	Signal; Koronivia;	Palisadengras; Surinamgras;	Pasto alambre, Pasto señal, Zacate señal, Zacate signal; Zacate Surinam, Pasto chontalpo, Pasto de la palizada, Pasto de las orillas, Pasto peludo, Pasto prodigio, Zacate prodigio; Braquiaria dulce, Kikuyu de la Amazonia, Pasto humidicola, Pasto humidicola dulce; Congo señal, Gambutera, Kenia, Pasto Congo, Pasto ruzi	Urochloa brizantha (Hochst. ex A. Rich.) R. D. Webster (Brachiaria brizantha (Hochst. ex A. Rich.) Stapf); Urochloa decumbens (Stapf) R. D. Webster (Brachiaria decumbens Stapf); Urochloa dictyoneura (Fig. & De Not.) Veldkamp P. (Brachiaria dictyoneura (Fig. & De Not.) Veldkamp P.); Urochloa humidicola (Rendle) Morrone & Zuloaga (Brachiaria humidicola (Rendle) Schweick.); Urochloa ruzi ensis (R. Germ. & C. M. Evrard) Morrone & Zuloaga (Brachiaria ruzizensis R. Germ. & C. M. Evrard)
REVISIONS OF TEST GUIDELINES / RÉVISIONS DE PRINCIPES DIRECTEURS D'EXAMEN ADOPTÉS / REVISIONEN ANGENOMMENER PRÜFUNGSRICHTLINIEN / REVISIONES DE DIRECTRICES DE EXAMEN ADOPTADAS							
NL	TWO	TG/25/9(proj.9)	Carnation, Clove Pink, Pink, Sweet William	Œillet	Nelke	Clavel	Dianthus L.
DE	TWO	TG/109/4(proj.4)	Large-flower Pelargonium; Regal Pelargonium; Crisped-leaf Pelargonium	Pélargonium des fleuristes	Edelpelargonie; Zitronenduft- Pelargonie	Pelargonio;	Pelargonium grandiflorum (Andrews) Willd.; P. ×domesticum L. H. Bailey; P. crispum (P.J. Bergius) L'Hér. and P. crispum x P. ×domesticum
ES	TWA	TG/122/4(proj.4)	Broomcorn, Durra, Feterita, Forage Sorghum, Grain sorghum, Great Millet, Kaffir-corn, Milo, Shallu, Sorghum, Sweet sorghum; Chicken-corn, Shattercane, Sordan, Sorghum x Sudan Grass, Sorghum- sudangrass, Sudan grass	Gros mil, Sorgho; Sorgho menu, Sorgho x Sorgho du Soudan	Mohrenhirse; Mohrenhirse x Sudangras, Sudangrass	Daza, Sorgo, Sorgo forrajero; Pasto del Sudán, Pasto Sudán, Sorgo x Pasto del Sudán, Sudangrass	Sorghum bicolor (L.) Moench; Sorghum ×drummondii (Steud.) Millsp. & Chase
ZA	TWF	TG/163/4(proj.7)	Apple Rootstocks	Porte-greffes du pommier	Apfel-Unterlagen	Portainjertos de manzano	Malus Mill.
FR	TWV	TG/210/2(proj.4)	Lentil	Lentille	Linse	Lenteja	Lens culinaris Medik.

**	TWP	Document No. No. du document Dokument-Nr. No del documento	English	Français	Deutsch	Español	Botanical name
<u>PARTIAL REVISIONS OF TEST GUIDELINES / RÉVISIONS PARTIELLES DE PRINCIPES DIRECTEURS D'EXAMEN ADOPTÉS / TEILREVISIONEN ANGENOMMENER PRÜFUNGSRICHTLINIEN / REVISIONES PARCIALES DE DIRECTRICES DE EXAMEN ADOPTADAS</u>							
NL	TWV	TG/12/9 Rev. and document TC/51/27	French Bean	Haricot	Gartenbohne	Judía común, Alubia	Phaseolus vulgaris L.
NL	TWV	TG/55/7 Rev. 2 and document TC/51/29	Spinach	Épinard	Spinat	Espinaca	Spinacia oleracea L.
ES	TWV	TG/61/7 Rev. and document TC/51/26	Cucumber, Gherkin	Concombre, Cornichon	Gurke	Pepino, Pepinillo	Cucumis sativus L.
NL/ FR	TWV	TG/76/8 and document TC/51/30	Sweet Pepper, Hot Pepper, Paprika, Chili	Piment, Poivron	Paprika	Aji, Chile, Pimiento	Capsicum annum L.
NL	TWO	TG/108/4 and document TC/51/32	Gladiolus	Glaïeul	Gladiole	Gladiolo	Gladiolus L.
ES	TWF	TG/201/1 and document TC/51/33	Mandarins	Mandarinier	Mandarinen	Mandarino	Citrus; Grp 1
FR	TWO	TG/263/1 and document TC/51/31	Buddleia, Butterfly-bush	Buddleia, Arbre aux papillons	Buddleie, Schmetterlingsst rauch	Budleya, Mariposa	Buddleja L.
UA	TWV	TG/268/1 and document TC/51/34	Garden Sorrel	Grande oseille	Wiesensauerampfer	Acedera común	Rumex acetosa L.
JP	TWV	TG/282/1 and document TC/51/28	Shiitake	Shiitake	Pasaniapilz	Shiitake	Lentinula edodes (Berk.) Pegler

129. The TC adopted the Test Guidelines for Adlay, subject to the addition of asterisks to Characteristics 1, 13, 14 and 20 being approved by the TWA by correspondence, as set out in Annex II to this report.

130. The TC adopted the Test Guidelines for Bottle Gourd subject to the deletion of Characteristics 17 "Neck: creasing at base" being approved by the TWV by correspondence, as set out in Annex II to this report.

131. UPOV has adopted 313 Test Guidelines, all of which are freely available on the UPOV website (http://www.upov.int/test_guidelines/en/).

Corrections to Test Guidelines

132. The TC noted the corrections made to the adopted Test Guidelines for Carrot (document TG/49/8), on the basis of document TC/51/35.

Draft Test Guidelines Discussed by the Technical Working Parties in 2014

133. The TC noted the draft Test Guidelines discussed by the Technical Working Parties at their sessions in 2014, as listed in document TC/51/2, Annex II.

Draft Test Guidelines to be discussed by the Technical Working Parties in 2015

134. The TC agreed the program for the development of new Test Guidelines and for the revision of Test Guidelines, as shown in document TC/51/2, Annex III.

135. The TC noted, that the Leading Expert for the Test Guidelines for Red Clover had requested that the drafting of this TG be postponed until 2016 and be withdrawn from the agenda of the forty-seventh session of the TWA in 2015.

136. The TC noted the status of the existing Test Guidelines, as listed in document TC/51/2, Annex IV.

Test Guidelines on the UPOV Website

Superseded versions of Test Guidelines

137. The TC noted the list of superseded Test Guidelines, as presented in document TC/51/2, Annex V.

138. The TC noted that all superseded Test Guidelines were now available on the UPOV website (http://upov.int/test_guidelines/en/list_supersede.jsp).

Web-based TG Template

139. The TC considered document TC/51/36 "Web-based TG template".

140. The TC received a demonstration of Version 1 of the web-based TG template by the UPOV Office.

141. The TC noted the developments concerning the web-based TG Template and, in particular, that:

- (a) e-workshops and a tutorial demonstrating the use of the new web-based TG template were conducted, recorded and made available to Leading and Interested Experts of Test Guidelines; and
- (b) the development of Version 2 of the web based TG template was planned to start in 2016, subject to available resources.

List of genera and species for which authorities have practical experience in the examination of distinctness, uniformity and stability

142. The TC considered document TC/51/4 and noted the number of genera and species for which members of the Union indicated their practical experience in the examination of DUS had increased from 3,305 in 2014 to 3,382 in 2015 (+ 2.3%). Information on members of the Union with practical experience in DUS examination is freely accessible via the GENIE database.

Program for the fifty-second session

143. The following draft agenda was agreed for the fifty-second session of the TC, to be held in Geneva in 2016:

1. Opening of the session
2. Adoption of the agenda
3. Discussion on:
 - (a) Variety descriptions and the role of plant material, including minimum number of growing cycles for DUS examination
 - (b) Quality parameters for DUS examination
 - (c) Facilitating development of databases
 - (d) Minimum distance between varieties
4. Report on developments in UPOV including relevant matters discussed in the last sessions of the Administrative and Legal Committee, the Consultative Committee and the Council
5. Progress reports on the work of the Technical Working Parties, including the Working Group on Biochemical and Molecular Techniques, and DNA-Profiling in Particular (BMT)
6. Matters arising from the Technical Working Parties

7. TGP documents
8. Molecular techniques
9. Variety denominations
10. Information and databases
 - (a) UPOV information databases
 - (b) Electronic application systems
 - (c) Exchangeable software
 - (d) Variety description databases
11. Assessing uniformity by off-types on the basis of more than one sample or sub-samples
12. Statistical methods for visually observed characteristics
13. Preparatory workshops
14. Test Guidelines
15. List of genera and species for which authorities have practical experience in the examination of distinctness, uniformity and stability
16. Program for the fifty-third session
17. Adoption of the report (if time permits)
18. Closing of the session

PROGRESS REPORT ON THE WORK OF THE TECHNICAL WORKING PARTIES AND THE WORKING GROUP ON BIOCHEMICAL AND MOLECULAR TECHNIQUES, AND DNA-PROFILING IN PARTICULAR IN 2014

144. The following reports were made by the Chairpersons on the work of the TWA, TWC, TWF, TWO, TWV, and BMT at the fiftieth session of the TC.

Technical Working Party for Agricultural Crops (TWA)

145. The TWA held its forty-third session in Mar del Plata, Argentina, from November 17 to 21, 2014 under the Chairmanship of Mrs. Robyn Hierse (South Africa). The detailed report of the meeting can be found in document TWA/43/27 "Report".

146. The session was attended by 45 participants from 23 member states of the Union, 6 observer states and 3 observer organizations. The preparatory workshop was held on the afternoon of June 16 and was attended by 24 participants from 13 members of the Union and 5 observer states.

147. The TWA was welcomed by Mr. Raimundo Lavignolle, President of the Directorate of the National Seed Institute (INASE). The TWA received a presentation on plant variety protection in Argentina by Mr. Alberto Ballesteros, Examiner for cereal, cotton, rice and forage crops.

148. The TWA adopted the agenda as presented in document TWA/43/1 Rev.

149. The TWA noted that the information on developments in plant variety protection from members and observers was provided in document TWA/43/25. This was then followed by a presentation from the Office of UPOV on the latest developments within UPOV (document TWA/43/24).

150. The TWA considered document TWA/43/11, which considered the effectiveness of Technical Committee, Technical Working Parties and Preparatory workshops. The TWA considered the proposals concerning possible means of improving the effectiveness of these bodies presented in the document TWA/43/11 and made a number of comments. The TWA comments are available in TWA/43/27 "Report".

151. The TWA noted the revisions to documents TGP/0 "List of TGP Documents and Latest Issue Dates", TGP/2 "List of Test Guidelines Adopted by UPOV", TGP/5 "Experience and Cooperation in DUS Testing",

TGP/7 “Development of Test Guidelines” and TGP/8 “Trial Design and Techniques Used in the Examination of Distinctness, Uniformity and Stability” which had been adopted by the Council at its forty-eighth ordinary session, as set out in paragraphs 5 to 21 of document TWA/43/3. The TWA also noted that the proposals for future revisions of TGP documents would be dealt with under separate documents.

152. The TWA considered document TWA/43/12, concerning the revision of document TGP/7: Plant Material Submitted for Examination. The TWA noted there were many factors that could affect plant material submitted for examination and agreed that documents TG/1/3 “General Introduction to the Examination of Distinctness, Uniformity and Stability and the Development of Harmonized Descriptions of new Varieties of Plants” and TGP/9 “Examining Distinctness” provided a good basis for authorities to prevent and address most of the problems. The TWA agreed that there would be no need to develop further guidance on plant material submitted for examination.

153. The TWA considered document TWA/43/13, concerning the revision of document TGP/7: Coverage of the Test Guidelines. It agreed that the new proposed paragraph in Approach 3, with guidance on procedures in case varieties are developed in the future with other types of propagation, would become repetitive if Test Guidelines were developed on the basis of varieties with more than one type of propagation and agreed that ASW 8 should be amended.

154. With regard to document TWA/43/15 “Minimizing the Variation Due to Different Observers”, the TWA considered the draft guidance in the Annex to document TWA/43/15, for inclusion in a future revision of document TGP/8, on minimizing the variation due to different observers, including guidance on PQ and QN/MG characteristics.

155. The TWA considered document TWA/43/19 “Guidance for Blind Randomized Trials”. The TWA agreed that the guidance to be developed should explain the importance of sample size and how to minimize biases in the methodology.

156. With regard to document TWA/43/20 “Examining Characteristics using Image Analysis”, the TWA agreed on the importance of precise definition of characteristics to be assessed using image analysis. The TWA noted the proposal from the expert from the European Union to prepare a new draft for New Section “Examining Characteristics Using Image Analysis” for inclusion in document TGP/8 for consideration by the TC and the TWPs at their sessions in 2015.

157. The TWA considered document TWA/43/21 “Statistical Methods for Visually Observed Characteristics”. The TWA noted the developments concerning a possible New Section: “Statistical Methods for Visually Observed Characteristics” to be introduced in document TGP/8: Part II: Techniques Used in DUS Examination, in a future revision of document TGP/8. The TWA agreed to request the TWC to clarify whether the COYD method for ordinal characteristics was recommended for any ordinal data, or whether other conditions should also be considered when selecting the appropriate analysis method.

158. The TWA considered document TWA/43/22 and the proposed example of a single record for a group of plants (MG) taken on plant parts for inclusion in a future revision of document TGP/9. The TWA agreed with the comment made by the TWO, TWF and TWV on the example of a single record for a group of plants (MG) taken on plant parts for inclusion in a future revision of document TGP/9.

159. With regard to document TWA/43/9 “Assessing uniformity by off-types on basis of more than one sample or sub-samples”, the TWA agreed with the TWC that the guidance provided in document TGP/10 was sufficient to address the situation C “More than one sample or subsample for a characteristic in the same growing trial” presented in the Annex III to document TWA/43/9.

160. On experience with new types and species, the TWA received a presentation by electronic means by an expert from New Zealand on experiences with fungal endophytes from the genus *Neotyphodium* and a presentation by an expert from Argentina on experiences with *Cyamopsis tetragonoloba*.

161. The TWA received a presentation by an expert from Brazil on a project to harmonize example varieties in wheat, soy bean and rice among Argentina, Brazil, Bolivia, Chile, Colombia, Paraguay and Uruguay, a copy of which is provided in document TWA/43/25.

162. The TWA discussed 9 draft Test Guidelines and agreed to submit to the TC five of those: namely, Adlay; Adzuki/Red bean; Cassava; Sorghum; and Urochloa. It was agreed to discuss the following draft Test Guidelines in 2015: Castor Bean; Cotton (revision); Elytrigia; Field Bean (revision); Finger Millet; Oats (revision); Quinoa; Red Clover; Scorpion Weed; Soya Bean (revision); and Wheat (revision).

163. The TWA agreed to discuss 11 Test Guidelines in 2015 and expressed its interest to revise the Test Guidelines for Ginseng (document TG/224/1) and Barley (document TG/19/7) in 2016.

164. At the invitation of Japan, the TWA agreed to hold its forty-fourth session in Obihiro, Japan, from July 6 to 10, 2015, with the preparatory workshop on July 5, 2015.

165. The TWA proposed to discuss the following items at its next session:

1. Opening of the Session
2. Adoption of the agenda
3. Short reports on developments in plant variety protection
 - (a) Reports from members and observers
 - (b) Reports on developments within UPOV
4. Molecular Techniques
5. TGP documents
6. Variety denominations
7. Information and databases
 - (a) UPOV information databases
 - (b) Variety description databases
 - (c) Exchangeable software
 - (d) Electronic application systems
8. Uniformity assessment
9. Matters to be resolved concerning Test Guidelines adopted by the Technical Committee (if appropriate)
10. Discussion on draft Test Guidelines (Subgroups)
11. Recommendations on draft Test Guidelines
12. Guidance for drafters of Test Guidelines
13. Date and place of the next session
14. Future program
15. Report on the session (if time permits)
16. Closing of the session

166. On November 19, 2014, the TWA visited the agricultural experimental station of the National Institute of Agricultural Technology (INTA) in Balcarce. The TWA also visited a seed processing facility for maize, wheat, sunflower and soya bean seeds of the Nidera Seeds Company and the growing trials for the wheat breeding program.

167. Mrs. Robyn Hierse was awarded a UPOV bronze medal in recognition of her chairmanship of the TWA from 2012 to 2014.

Technical Working Party on Automation and Computer Programs (TWC)

168. The TWC held its thirty-second session in Helsinki, Finland, from June 3 to 6, 2014, under chairmanship of Mr. Sami Markkanen (Finland), Chairperson of the TWC.

169. The TWC session was attended by 27 participants from 15 members of the Union. The preparatory workshop was held during the afternoon on Monday, June 2, and was attended by 15 participants from 9 members of the Union.

170. The TWC was welcomed by Mrs. Riitta Heinonen, Deputy Director General, Ministry of Agriculture and Forestry of Finland and by Mrs. Marja Savonmaki, Senior Specialist, Ministry of Agriculture and Forestry of Finland. The TWC received a presentation on the plant variety protection (PVP) system in Finland from Mrs. Tarja Hietaranta, Senior Officer, Seed Certification Unit Finnish Food and Safety Authority.

171. The TWC noted that the information on developments in plant variety protection from members and observers was provided in document TWC/32/26 "Reports on Development in Plant Variety Protection from

Members and Observers". The TWC also received a presentation from the Office of the Union on the latest developments within UPOV (document TWC/32/24).

172. The TWC considered documents TWC/32/16 "Revision of Document TGP/8: Part II: Selected Techniques used in DUS Examination, Section 3: Method of Calculation of COYU" and TWC/32/16 Add. "Addendum to Development of the Combined-Over-Year Uniformity Criterion". A presentation was received from an expert from the United Kingdom. It was recalled that the present method of calculation of COYU was overly strict due to the method of smoothing used and that very low probability levels were used in compensation. At its thirty-first session, the TWC agreed that the bias in the present method of calculation of COYU could be addressed by a change of smoothing method from "moving average" to "cubic smoothing splines". The expert from the United Kingdom gave a demonstration of a module for the DUST software incorporating a modified version of COYU using smoothing splines. The TWC agreed to invite other experts to evaluate the new method and software. Software would be made available to interested experts both in DUST and also using the "R" software package. The TWC agreed that participants would seek to identify probability levels to match decisions using the previous COYU method for continuity in decisions. The TWC agreed that participants of this practical exercise should send a report on their experiences to the expert from the United Kingdom by March 15, 2015, and that the expert from the United Kingdom should compile a report for the thirty-third session of the TWC.

173. The TWC considered document TWC/32/18 "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". The addendum to that document reported on a practical exercise using a single quantitative characteristic for flax to demonstrate different methods for producing variety description. Experts from France, Germany, Italy, Japan and the United Kingdom participated. The TWC agreed to request an expert from France to use the information to clarify the steps used in each method and the differences between them. The TWC agreed that this should be presented for consideration at the thirty-third session of the TWC. The TWC received a presentation by an expert from Italy explaining the Italian method for developing variety descriptions (Annex III to TWC/32/18). An expert from Germany also gave a verbal explanation of Annex II "Different forms that variety descriptions could take and the relevance of scale levels", describing the relationship between scale levels and variety descriptions. The TWC agreed that this could be used as an introduction to future guidance to be developed on variety descriptions.

174. The TWC received a presentation from an expert from China on "Variation of variety descriptions over years in different locations", as presented in Annex I to document TWC/32/6. The TWC agreed that the information provided was useful to demonstrate the robustness of some characteristics and for defining grouping characteristics.

175. The TWC received a presentation by an expert from the Netherlands on the use of the characteristic content of Glyceraphanin in broccoli based on bulk samples, as set out in the Annex to document TWC/32/17. The TWC agreed that validation of characteristics based on bulk samples should consider analysis of individual plants but noted that it could have cost implications.

176. The TWC considered document TWC/32/21 "Revision of Document TGP/8: Part II: New Section: Statistical Methods for Visually Observed Characteristics". The TWC received a presentation by an expert from Finland comparing distinctness decisions for meadow fescue using two methods: the Chi-square test; and a new method presented previously to the TWC by an expert from Denmark. This method is similar in approach to COYD but is suitable for ordinal data. The TWC agreed that the new method was tailored for the analysis of visually observed characteristics and had a better fundamental basis when compared to the chi-square test. The TWC agreed that further development was required, particularly with regard to software. In addition, the TWC agreed to invite an expert from China to make a presentation at the thirty-third session of the TWC on the analysis of visually observed characteristics using the DUST China (DUSTC) software package using the same data set for meadow fescue provided by Finland.

177. The TWC considered document TWC/32/9 "Assessing uniformity by off-types on basis of more than one sample or sub-samples". The TWC agreed that values of Type I and Type II errors should be included in each of the examples described in the situations A and B for the development of guidance in document TGP/10. The Type I error is associated with a decision for non-uniformity (rejection of the true null hypothesis) and the Type II error is associated with a decision for uniformity (acceptance of the alternative hypothesis). The TWC agreed that guidance currently provided in TGP/10 was sufficient to address situation C. Annex V of document TWC/32/9 gave an example of a sequential approach applied a single growing cycle and was introduced by an expert from Germany. That included information on Type I and Type II errors. The TWC agreed wording for the guidance for situation D.

178. The TWC received a presentation by electronic means by an expert from Mexico on the SISNAVA software proposed by Mexico for inclusion in document UPOV/INF/16 “Exchangeable software” and agreed that discussion on its conclusion should be continued further. The TWC noted the explanation of the software “Information System (IS) used for Test and Protection of Plant Varieties in the Russian Federation”, as prepared in Annex IV of the document TWC/32/7.

179. The TWC received a presentation from China on “PVP Database in China”, as set out in Annex II to document TWC/32/6. The TWC noted that the new software included modules for the management of applications, variety description database, data analysis and image analysis.

180. The TWC received a presentation by an expert from Germany, included in document TWC/32/25, on the development and features of a document management system for variety files used in Germany.

181. The TWC noted the summary of information from an updated survey on hand-held data capture devices provided in Annex I of document TWC/32/27 and that this information might be included in UPOV/INF/22 “Software and equipment used by members of the Union”. An expert from Germany gave a presentation on the use of hand-held data capture devices in DUS tests in Germany (document TWC/32/27, Annex II).

182. The TWC considered document TWC/32/11, considering improvements to the effectiveness of the Technical Committee, Technical Working Parties and Preparatory Workshops. Proposals for possible means for improvement were considered and comments were made.

183. Mr. Sami Markkanen was awarded a UPOV bronze medal in recognition of his chairmanship of the TWC from 2012 to 2014.

184. The TWC agreed to hold its third-third session in Natal, Brazil, from June 30 to July 3, 2015, with the preparatory workshop on June 29, 2015.

185. The TWC planned to discuss the following items during the thirty-third session:

1. Opening of the session
2. Adoption of the agenda
3. Short reports on developments in plant variety protection
 - (a) Reports from members and observers
 - (b) Reports on developments within UPOV
4. Molecular techniques
5. Improving the effectiveness of the Technical Committee, Technical Working Parties and Preparatory Workshops
6. TGP documents
7. Information and databases
 - (a) UPOV information
 - (b) Variety description databases
 - (c) Exchangeable software
 - (d) Electronic application systems
8. Variety denominations
9. Uniformity assessment by off-types
10. Experience with new types and species
11. Information on the methods used for data processing for the assessment of distinctness and for producing variety descriptions in China
12. Statistical methods for visually observed characteristics using the DUSTC software package
13. Analysis of variance for “variety x location” (environment) interaction of QN
14. Image analysis system in China
15. Method of calculation of COYU: analysis of the practical exercise
16. Comparison of methods used for producing variety descriptions
17. Information on bulk samples on the routine measurement of Glycoraphanin content in broccoli
18. Weighting matrix in the GAIA software for soybean

19. A rationale for excluding varieties of common knowledge from the second growing cycle when COYD is used
20. Date and place of the next session
21. Future program
22. Report on the session (if time permits)
23. Closing of the session

186. On the afternoon of June 4, the TWC visited the testing station of the Finnish Food Safety Authority (Evira) at Loimaa and viewed field trials of barley, wheat, rye, white clover, red clover and meadow fescue.

Technical Working Party for Fruit Crops (TWF)

187. The TWF held its forty-fifth session in Marrakesh, Morocco, from May 26 to 30, 2014. The session was opened by Mrs. Carensa Petzer (South Africa), Chairperson of the TWF.

188. The TWF session was attended by 39 participants from 18 members of the Union, 3 observer States and 2 observer organizations. The Preparatory Workshop was attended by 17 participants from 9 members of the Union and 3 observer States.

189. The TWF was welcomed by Mr. Mohammed Sadiki, Secretary General, Ministry of Agriculture and Marine Fisheries of Morocco and Mr. Amar Tahiri, Chief, Division of Seeds and Plant Control, National Office of Sanitary Food Safety (ONSSA). Mr. Amar Tahiri made a presentation on plant variety protection in Morocco.

190. The TWF considered the proposals concerning possible means of improving the effectiveness of the TWPs and the Preparatory Workshops and made comments, as provided in document TWF/45/32 "Report", paragraph 9.

191. The TWF considered document TWF/45/27 "The duration of DUS test in the fruit sector" and received a presentation from an expert from the European Union on a Community Plant Variety Office of the European Union (CPVO) project on "Reducing the number of obligatory observation periods in DUS testing for candidate varieties in the fruit sector". The TWF requested the leading experts to propose suitable wording for minimum duration period and the number of growing cycles for their draft Test Guidelines in 2015 and requested the expert from the European Union to collate the options developed by the leading experts and to seek to develop possible new standard wording options.

192. The TWF received a presentation from the experts from Germany and New Zealand on the previous work done on harmonized variety descriptions for apple for an agreed set of varieties, as reproduced in document TWF/45/28. The TWF received information from an expert from the European Union on a ring test project on Apple for the management of variety description, to be launched in 2015. The aim of the project will be to identify the reason for differences in variety descriptions in Europe, when using similar varieties and the same rootstock. The TWF requested an expert from the European Union to report on progress with the project at its forty-sixth session.

193. The TWF considered document TWF/45/2 "Molecular Techniques". The TWF also received a presentation by the expert from France on the study concerning molecular techniques and DUS testing made by the Group for Study and Control of Varieties and Seeds (GEVES), explaining how those techniques are being used in France, especially in relation to the detection of resistance genes, as well as the use of molecular tools on fruit trees. The TWF agreed that it would be useful to receive more information on the use of molecular techniques in DUS examination and, in that regard, invited the experts from Spain to provide information on the use of such tools by the *Oficina Española de Variedades Vegetales* (OEVV). The TWF also invited other participants to present their experience on the use of biochemical and molecular techniques in fruit crops at the TWF session in 2015.

194. The TWF received a presentation from Mr. Jean Maison (European Union), the coordinator of the Subgroup as presented in document TWF/45/31 Rev. "Partial Revision of the Test Guidelines for Mandarins". The Leading expert presented the proposal for the partial revision of the Test Guidelines for Mandarin. The TWF agreed to amend characteristic 25 "Anther: viable pollen".

195. The TWF considered document TWF/45/12 "Revision of document TGP/7: Plant Material Submitted for Examination". The TWF considered the examples presented by the experts from the European Union

and Germany, on their experiences with regard to plant material submitted for examination, and the solutions that had been developed to address problems. The TWF noted that, in the examination of fruit species, the “cyclophysis” effect, which means the effect of the place where the scion is taken from within the mother plant due to different degrees of maturity could have an impact on the expression of a particular characteristic. If, for example, graftwood material is taken from older trees to produce young trees for comparing with plants of a candidate variety at same age, the fresh grafting will immediately produce inflorescences that need to be removed during the establishment period, in order to produce a proper tree, with a central leader and sufficient side shoots attached to it.

196. The TWF noted the actions taken to avoid the influence of the method of propagation on the outcome of the DUS examination in certain crops in the European Union and Germany. It was also noted that, in the case of blueberry and grapevine, plant material resulting from meristematic tissue could not be accepted for examination due to the risk of somaclonal variation. The TWF agreed that authorities in charge of receiving plant material for examination should provide guidance on the requirements of material submitted such as quality and age.

197. The TWF agreed that the following draft Test Guidelines should be submitted to the TC for adoption: Acca; Apple rootstocks; Mandarins; and Pecan nut. The TWF agreed to discuss 12 draft Test Guidelines at its forty-sixth session.

198. At the invitation of South Africa, the TWF agreed to hold its forty-sixth session in Mpumalanga, South Africa, from August 24 to 28, 2015, with the preparatory workshop on August 23.

199. The TWF proposed to discuss the following items at its next session:

1. Opening of the Session
2. Adoption of the agenda
3. Short reports on developments in plant variety protection
 - (a) Reports from members and observers
 - (b) Reports on developments within UPOV
4. Improving the effectiveness of the Technical Committee, the Technical Working Parties and the Preparatory Workshops
5. Molecular Techniques
6. TGP documents
7. Variety denominations
8. Information and databases
 - (a) UPOV information databases
 - (b) Variety description databases
 - (c) Exchangeable software
 - (d) Electronic application systems
9. Uniformity assessment
10. Experiences with new types and species
11. Management of variety collections for DUS examination
12. Duration of DUS tests in the fruit sector
13. Harmonized example varieties for Apple: historical data and possible new developments
14. Matters to be resolved concerning Test Guidelines adopted by the Technical Committee
15. Proposals for partial revision/corrections of Test Guidelines
16. Discussion on draft Test Guidelines (Subgroups)
17. Recommendations on draft Test Guidelines
18. Guidance for drafters of Test Guidelines
19. Date and place of the next session
20. Future program
21. Adoption of the Report of the session (if time permits)
22. Closing of the session

200. On May 29, the TWF visited the Domain Tabouhanit, a 425 hectare orchard cultivated with citrus (mainly oranges, lemons and clementines), nectarines, olives and grapevine, in the neighborhood of

Marrakesh. The TWF was welcomed by Mr. Ben Arirou Lahcen, Manager. The TWF also visited Essnoussi Nurseries, founded by Mr. Essnoussi, and managed by his son Nouredine Essnoussi, who welcomed the TWF. Essnoussi Nurseries produce certified plants of olive trees and almonds as well as carob and pomegranate plantlets. The owner explained the procedure for producing certified plants. The TWF visited the Laboratory of Plant Biotechnology of the Regional Center of the *Institut National de Recherche Agronomique* (INRA) in Marrakesh. It was welcomed by Mr. Mohamed Anjarne, Deputy Director, who explained the main task of the Laboratory for multiplication of date palm tree using organogenesis techniques (somatic embryogenesis and flowering techniques used for research) and the breeding program for disease resistance.

201. Mrs. Carensa Petzer was awarded a UPOV bronze medal in recognition of her chairmanship of the TWF from 2012 to 2014.

Technical Working Party for Ornamental Plants and Forest Trees (TWO)

202. The TWO held its forty-seventh session in Naivasha, Kenya, from May 19 to 23, 2014. The session was chaired by Mr. Nik Hulse (Australia), Chairman of the TWO. The detailed report is provided in document TWO/47/28.

203. The meeting was attended by 45 participants, from 16 members of the Union, three observer states and one observer organization. The preparatory workshop was held during the morning of May 18 and was attended by 40 participants.

204. The TWO was welcomed by Mr. James Onsando, Managing Director, Kenya Plant Health Inspectorate Service (KEPHIS), who made a presentation on "Status of plant variety protection in Kenya". Mrs. Jane Ngige, Secretary-General, Kenya Flower Council, also welcomed the participants and made a presentation on "Kenya Flower Council".

205. The TWO considered document TWO/47/11 "Improving the effectiveness of the Technical Committee, Technical Working Parties and Preparatory Workshops" and made comments on the proposals concerning possible means of improving the effectiveness of the TWPs and the preparatory workshops. The TWO agreed that E-workshops, including the use of the web-based TG template and guidance on the presentation of Test Guidelines, should be recorded and made available on the UPOV website and repeated during the preparatory workshops to improve preparation of Test Guidelines and presentation of Test Guidelines at TWPs by the Leading Expert.

206. The TWO considered document TWO/47/12 "Revision of Document TGP/7: Plant Material Submitted for Examination". The TWO received presentations by the experts from the European Union and the Netherlands on experiences with regard to plant material submitted for examination, and the solutions that had been developed to address problems. It noted that a copy of the presentations would be provided as an addendum to document TWO/47/12. The TWO agreed that authorities in charge of receiving plant material for examination should provide guidance on the requirements of material submitted, such as quality and age.

207. The TWO considered document TWO/47/13 "Revision of Document TGP/7: Coverage of the Test Guidelines" and agreed that Approach 3 "Specify existing type of propagation and anticipate future developments" was the most appropriate guidance for Test Guidelines that are developed on the basis of varieties with one type of propagation when varieties may be developed in the future with other types of propagation.

208. The TWO considered document TWO/47/14 "Revision of Document TGP/7: Drafter's Kit for Test Guidelines" and noted the plans for a revision of document TGP/7 and the TG Drafter's webpage for consistency with the introduction of the web-based TG Template in 2014, as set out in document TWO/47/14, paragraphs 6 to 8.

209. The TWO considered document TWO/45/15 "Revision of Document TGP/8: Part I: DUS Trial Design and Data Analysis, New Section: Minimizing the Variation due to Different Observers" and agreed that the draft guidance in the Annex to document TWO/47/15 should continue to be developed for inclusion in a future revision of document TGP/8 on minimizing the variation due to different observers, including guidance on PQ and QN/MG characteristics, in conjunction with the points raised by the expert from Australia. The TWO agreed that the document should focus on variation between observers at the authority level and not on minimizing observer variation between authorities.

210. The TWO considered document TWO/47/19 "Revision of Document TGP/8: Part II: Techniques Used in DUS Examination, New Section: Guidance of Data Analysis for Blind Randomized Trials". The TWO agreed that blind randomized trials were rarely used. The TWO noted that blind randomized trials were used: in Brazil to confirm, in some cases, the assessment of distinctness under a breeder-based testing system for agricultural crops and vegetables; in New Zealand, for some fruit crops and in cases of dispute regarding distinctness; and in the United Kingdom and the Netherlands to confirm lack of distinctness between varieties.

211. The TWO considered document TWO/47/22 "Revision of Document TGP/9: Section 2.5: Photographs" and agreed with the proposed guidance on photographs for inclusion in document TGP/9, Section 2.5 "Photographs".

212. The TWO considered document TWO/47/9 "Assessing Uniformity by Off-Types on Basis of more than one Sample or Sub Samples" and the situations described in the Annexes I to IV as a basis to develop guidance in document TGP/10. The TWO agreed that clarification should be provided on the decision to be taken in Situation B, Alternative (a) "the trial is repeated at both locations for a second year", in case after repeating a trial for the second year a variety is within the uniformity standard in one growing location but is not within the uniformity standard in the other growing location.

213. The TWO considered document TWO/47/23 "Revision of Document TGP/14: Section 2.4: Apex/Tip Shape Characteristics" and considered the proposal to develop an explanation on the inclusion of a state of expression based on a differentiated tip in shape of apex characteristics and proposed that document TGP/14, section 2.4 be amended accordingly. The TWO agreed that the approach in document TGP/14 for shape of apex and tip characteristics was most suitable for leaves or larger structures and should be used in particular cases only.

214. The TWO considered document TWO/47/10 and received a presentation on a web-based Test Guidelines Template (TG Template) for drafters of Test Guidelines by electronic means from the Office of the Union. The TWO noted the request for Leading Experts to participate in the testing of Version 1 of the web-based TG Template. The TWO agreed that the web-based TG Template should allow the printing of comments made by interested experts, sorted by interested expert or characteristic, and noted that assistance would be provided by the UPOV Office for Leading Experts on the use of the web-based TG Template, if requested.

215. The TWO considered document TWO/47/25 "Partial revision of the Test Guidelines for Buddleja (document TG/263/1)" and document TWO/47/26 "Partial revision of the Test Guidelines for Gladiolus (document TG/108/4)". The TWO agreed that these Test Guidelines, as amended by the TWO, should be put forward for adoption by the Technical Committee.

216. The TWO agreed to submit six Test Guidelines to the Technical Committee for adoption: Aloe; Campanula; Carnation (Revision); China Aster; Cosmos; and Regal Pelargonium (Revision). At its forty-eighth session to be held in 2015, the TWO planned to discuss 13 Test Guidelines, consisting of 4 revisions and 9 new Test Guidelines.

217. At the invitation of the United Kingdom, the TWO agreed to hold its forty-eighth session in Cambridge, from September 14 to 18, 2015, with the preparatory workshop on September 13, 2015.

218. The TWO proposed to discuss the following items at its next session:

1. Opening of the Session
2. Adoption of the agenda
3. Short reports on developments in plant variety protection
 - (a) Reports from members and observers
 - (b) Reports on developments within UPOV
4. Molecular techniques
5. TGP documents
6. Variety denominations
7. Information and databases
 - (a) UPOV information databases
 - (b) Variety description databases

- (c) Exchangeable software
- (d) Electronic application systems
- 8. Uniformity assessment
- 9. Experience with new types and species
- 10. Improving the effectiveness of the Technical Committee, the Technical Working Parties and the Preparatory Workshops
- 11. Influence of different sources on vegetatively propagated material used in DUS examination
- 12. Examples of different growing practice in DUS testing
- 13. Matters to be resolved concerning Test Guidelines adopted by the Technical Committee
- 14. Discussion on draft Test Guidelines
- 15. Recommendation on draft Test Guidelines
- 16. Guidance for drafters of Test Guidelines
- 17. Date and place of the next session
- 18. Future program
- 19. Report on the session (if time permits)
- 20. Closing of the session

219. On the afternoon of May 21, 2014, the TWO visited the facilities of Nini Limited, a cut rose company based in Naivasha. The TWO was welcomed by Mr. Philip Kuria, Post-harvest and Export Supervisor, and Ms. Faith Ndunge, Officer-in-Charge, KEPHIS, Naivasha, and received a presentation by Mr. Moses Wachira, Senior Production Supervisor. It was explained that rose production in Nini began in 1998 and had expanded to the current 44 hectares of greenhouses and 600 permanent employees, 70% of which were women. Currently, 25 varieties from seven different breeders were being produced with 8 different colors on a scale of production of 2 million cut flowers per week. Mr. Kuria reported on the collaboration for market development with the breeders of the varieties used and highlighted the important role of plant variety protection for the success of the activities of the company.

220. Mr. Nik Hulse was awarded a UPOV bronze medal in recognition of his chairmanship of the TWO from 2012 to 2014.

Technical Working Party for Vegetables (TWV)

221. The forty-eighth session of the TWV was held from June 23 to 27, 2014 in Paestum, Italy close to CRA-SCS Seed Testing and Certification Centre, the Italian DUS testing station for vegetables in Battipaglia.

222. To commemorate the sad loss of Mr. Francois Boulineau, the TWV Chairman, participants observed a minute of silence at the beginning of the Session.

223. The TWV elected Mr. Kees van Ettehoven (the Netherlands) and Mrs. Swenja Tams (Germany) as joint *ad hoc* Chairpersons.

224. The preparatory workshop, held on June 22, 2014, was attended by 19 participants from 8 members. The TWV Session was attended by 32 participants, representing 17 members and 3 observer organizations.

225. The TWV was welcomed by Mr. Pier Giacomo Bianchi, Head of Agricultural Research Council – Centre (CRA-SCS) in a video message. Mrs. Anna Giulini, Researcher, CRA-SCS made a presentation on “PBR at glance in Italy” on behalf of Mr. Bianchi.

226. On the afternoon of June 26, 2014, the TWV visited the CRA-SCS Seed Testing and Certification Centre in Battipaglia, where it received a presentation by Mrs. Romana Bravi, Head of the Battipaglia Office, CRA-SCS. The TWV visited DUS trials for tomato, melon, zucchini, cucumber and other species.

227. The TWV considered the revisions of TGP documents. During the discussion of the TGP documents, the TWV considered document TWV/48/12 "Revision of Document TGP/7: Plant Material Submitted for Examination" and discussed the implication of applications for vegetatively propagated varieties in a commonly seed-propagated species. Another important issue for the TWV was the use of disease resistance in DUS examination regarding the obligatory testing of those characteristics.

228. A number of new Test Guidelines were finalized to be put forward to the TC: namely, Bottle Gourd, Calabash (*Lagenaria siceraria* (Molina) Standl.); and also '*Cucurbita maxima* x *Cucurbita moschata*'. Both species are used as rootstocks for vegetative propagated varieties. Cassava (*Manihot esculenta* Crantz.), was also finalized.

229. Partial revisions of the Test Guidelines for Cucumber, French Bean, Shiitake, Spinach and for a number of Test Guidelines covering *Brassica* species were agreed. The revision of Lentils was also finalized.

230. For the forty-ninth session, it is planned to discuss 2 new Test Guidelines, 6 revisions and 4 partial revisions.

231. At the invitation of the European Union, the TWV agreed to hold its next meeting in Angers, France, from June 15 to 19, 2015, with the preparatory workshop on June 14, 2015.

232. The TWV proposed to discuss the following items at its next session:

1. Opening of the Session
2. Adoption of the agenda
3. Short reports on developments in plant variety protection
 - (a) Reports from members and observers
 - (b) Reports on developments within UPOV
4. Molecular Techniques
 - (c) Developments in UPOV
 - (d) Presentation on the use of molecular techniques in DUS examination
5. TGP documents
6. Variety denominations
7. Information and databases
 - (a) UPOV information databases
 - (b) Variety description databases
 - (c) Exchangeable software
 - (d) Electronic application systems
8. Uniformity assessment
9. Management of reference collections
10. New issues arising for DUS examination
11. Use of disease resistance characteristics in DUS examination
12. Matters to be resolved concerning Test Guidelines adopted by the Technical Committee (if appropriate)
13. Discussion on draft Test Guidelines (Subgroups)
14. Recommendations on draft Test Guidelines
15. Guidance for drafters of Test Guidelines
16. Date and place of the next session
17. Future program
18. Report on the session (if time permits)
19. Closing of the session

Working Group on Biochemical and Molecular Techniques, and DNA-Profiling in Particular (BMT)

233. The BMT held its fourteenth session in Seoul, Republic of Korea, from November 10 to 13, 2014. The BMT was welcomed by Mr. Hyun Kwan Shin, Director General, Korea Seed & Variety Service (KSVS) and received a presentation on plant variety protection in the Republic of Korea from Mr. Moo Kyung Yoon,

Director of Plant Variety Protection Division, KSVS. The session was opened by Mr. Alejandro F. Barrientos Priego (Mexico), Chairman of the BMT.

234. A preparatory workshop was held on November 9, 2014, and attended by 20 participants from 7 members of the Union, 1 observer State and 1 observer organization. The BMT session was attended by 44 participants from 10 members of the Union, 1 observer State and 5 observer organizations.

235. The BMT received the following presentations concerning new developments in biochemical and molecular techniques by DUS experts, biochemical and molecular specialists, plant breeders and relevant international organizations:

- The Use of Reference Varieties in Varietal Distinctness: An Approach under Investigation in the United States of America for Potential Application in Plant Variety Protection
- Identification of Rice Varieties Using Genic Markers for Three DUS Characteristics
- The use of Molecular Markers (SNP) for Maize DUS Testing
- Potential Uses of Molecular Markers in Management of Rose Varieties for the PVP System
- Development of EST-SSR Markers of Lettuce and Variety Identification Using EST-SSR Markers
- Construction of DNA Profile Database of Strawberry Varieties Using SSR Markers
- Use of Molecular Marker Techniques for Selection of 'Similar Variety' about 'Candidate Variety'
- Improving Efficiency of DUS Testing of Perennial Ryegrass by Combining Morphological and Molecular Variety Distances
- A European Potato Database as Centralized Collection of Varieties of Common Knowledge
- Molecular Markers as Predictors for 'Traditional' Characteristics
- Ownership and Use of DUS Samples and of DNA and DNA Data During and After the DUS Tests

236. The BMT received the following presentation concerning the use of molecular techniques in examining essential derivation:

- Identification of SNP Markers to aid Assessment of Essential Derivation in Maize

237. The BMT received the following presentations concerning the use of molecular techniques in variety identification:

- Use of DNA Variety Identification Technique for Measures Against the Infringement of Plant Breeders' Rights in Japan
- Determining a Threshold for Genetic Conformity In Potato Seedlings

238. On November 12, 2014, OECD, UPOV, ISTA held a Joint Workshop (Workshop) in Seoul, Republic of Korea, in conjunction with the BMT session, under the chairmanship of Mr. Kees van Ettehoven (Netherlands). The Workshop received the following presentations on the use of DNA techniques in OECD, UPOV, ISTA and ISO:

- Introduction to the OECD Seed Scheme and the situation with regard to molecular techniques
- Introduction to UPOV and the situation with regard to molecular techniques
- Introduction to ISTA and the situation with regard to molecular techniques
- Introduction to ISO and the situation with regard to molecular techniques
- Existing areas of cooperation between OECD, UPOV and ISTA
- Opportunities for cooperation between OECD, UPOV, ISO and ISTA with regard to molecular techniques

239. The Workshop agreed that it would be useful to develop a joint document explaining the principle features (e.g. DUS, variety identification, variety purity, etc.) of the systems of OECD, UPOV and ISTA. It was also agreed that it would be useful for mutual understanding, to repeat the joint workshop at relevant meetings of the OECD and ISTA.

240. The Workshop agreed to propose an inventory by UPOV, OECD and ISTA of the use of molecular marker techniques, by crop, with a view to developing a document containing that information, in a similar format to UPOV document UPOV/INF/16 "Exchangeable Software". It was noted that OECD had already collected some information regarding the use of molecular techniques by its designated authorities.

241. In response to the invitation received from Russian Federation, the BMT agreed to hold its fifteenth session and a preparatory workshop in Moscow, Russian Federation, in May 2016.

242. The BMT planned to discuss the following items at its fifteenth session:

1. Opening of the session
2. Adoption of the agenda
3. Reports on developments in UPOV concerning biochemical and molecular techniques
4. Short presentations on new developments in biochemical and molecular techniques by DUS experts, biochemical and molecular specialists, plant breeders and relevant international organizations
5. Report of work on molecular techniques in relation to DUS examination
6. International guidelines on molecular methodologies
7. Variety description databases
8. Methods for analysis of molecular data
9. The use of molecular techniques in examining essential derivation¹
10. The use of molecular techniques in variety identification¹
11. Cooperation between OECD, UPOV, ISTA and ISO
12. Date and place of next session
13. Future program
14. Report of the session (if time permits)
15. Closing of the session

243. Mr. Alejandro Barrientos Priego was awarded a UPOV bronze medal in recognition of his chairmanship of the BMT from 2012 to 2014.

244. The Council is invited to:

(a) note the work of the TC and that of the TWPs and BMT reported to the TC, as provided in this document; and

(b) approve the work of the TC and the work programs of the TWPs and BMT reported to the TC, as provided in this document.

[Annex follows]

¹ Breeders-Day

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ANNEX

PROGRAM FOR TGP DOCUMENTS

Title of document	Current approved* documents	2014						2015						2016							
		TC-EDC	TC/50	CAJ/69	TWPs	CAJ/70	C/48	TC-EDC	TC/51	CAJ/71	TWPs	CAJ/72	C/49	TC-EDC	TC/52	CAJ/73	TWPs	CAJ/74	C/50		
TGP/0	List of TGP Documents and Latest Issue Dates	TGP/0/7 ADOPTED						TGP/0/7 Adopt												TGP/0/9 Adopt	
TGP/1	General Introduction with Explanations	-	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
TGP/2	List of Test Guidelines Adopted by UPOV	TGP/2/2 ADOPTED	TGP/2/2 Draft 1	TGP/2/2 Draft 2	TGP/2/2 Draft 3			TGP/2/2 Adopt													
TGP/3	Varieties of Common Knowledge	C(Extr./19/2 Rev.																			
TGP/4	Constitution and Maintenance of Variety Collections	TGP/4/1 ADOPTED																			
TGP/5	Experience and Cooperation in DUS Testing	ADOPTED																			
	Section 3: Technical Questionnaire to be Completed in Connection with an Application for Plant Breeders' Rights	Section 3/1 Adopted							TC-EDC/Jan15/2	TC/51/5	CAJ/71/7				Section 3/2 Adopt						
	Section 8: Cooperation in Examination	Section 8/1 Adopted							TC-EDC/Jan15/2	TC/51/5	CAJ/71/7				Section 8/2 Adopt						
	Section 9: List of Species in Which Practical Knowledge has Been Acquired or for Which National Test Guidelines Have Been Established	Section 9/1 Adopted							TC-EDC/Jan15/2	TC/51/5	CAJ/71/7				Section 9/2 Adopt						
	Section 10: Notification of Additional Characteristics	Section 10/3 Adopted	TC-EDC/Jan14/2	TC/50/5	CAJ/69/3			Sec. 10/3 Adopt													
TGP/6	Arrangements for DUS Testing	TGP/6/1 ADOPTED																			
TGP/7	Development of Test Guidelines	TGP/7/4 ADOPTED																			
	TC Approved Revisions (document TC/50/5 Annex I)		TC-EDC/Jan14/2	TC/50/5	CAJ/69/3			TGP/7/4 Adopt													
	Drafter's Kit for Test Guidelines (Drafter: Office of the Union)			TC/50/5		TWP/xx/14			TC-EDC/Jan15/2	TC/51/5		TWP/xx/12			x	x	x			TGP/7/5 Adopt	
	Plant Material Submitted for Examination (Drafter: Jens Wegner (European Union))		TC-EDC/Jan14/5	TC/50/17		TWP/xx/12			TC-EDC/Jan15/3	TC/51/14											
	Coverage of the Test Guidelines (Drafter: Office of the Union)			TC/50/5		TWP/xx/13			TC-EDC/Jan15/4	TC/51/15							x			TGP/7/5 Adopt	
	Use of Proprietary Photographs and Illustrations in Test Guidelines (Drafter: Office of the Union)											TWP/xx/13			x	x	x				TGP/7/5 Adopt
	Regional Sets of Example Varieties (Drafter: Office of the Union)											TWP/xx/14			x	x	x				TGP/7/5 Adopt
TGP/8	Trial Design and Techniques Used in the Examination of Distinctness, Uniformity and Stability	TGP/8/2 ADOPTED	see Appendix					TGP/8/2 Adopt	see Appendix					see Appendix					TGP/8/3 Adopt		
TGP/9	Examining Distinctness	TGP/9/1 ADOPTED																			
	TC Approved Revisions (document TC/50/5 Annex III)		TC-EDC/Jan14/2	TC/50/5	CAJ/69/3						CAJ/71/7				TGP/9/2 Adopt						
	Revision of Section 2.5: Photographs (Drafter: Beate Ruecker (Germany))					TWP/xx/22			TC-EDC/Jan15/13	TC/51/23	CAJ/71/7				TGP/9/2 Adopt						
	Method of Observation (single measurement - MG) (Drafter: Office of the Union)					TWP/xx/22			TC-EDC/Jan15/13	TC/51/23	CAJ/71/7				TGP/9/2 Adopt						
	Schematic Overview of TGP Documents Concerning Distinctness (Drafter: Office of the Union)					TWP/xx/22			TC-EDC/Jan15/13	TC/51/23	CAJ/71/7				TGP/9/2 Adopt						
TGP/10	Examining Uniformity	TGP/10/1 ADOPTED																			
	Assessing Uniformity by Off-Types on the Basis of More than One Growing Cycle or on the Basis of Sub-Samples (Drafter: Office of the Union)		TC-EDC/Jan14/2	TC/50/12		TWP/xx/9			TC-EDC/Jan15/6	TC/51/25		TWP/xx/9			x	x	x				TGP/10/2 Adopt
TGP/11	Examining Stability	TGP/11/2 ADOPTED																			
TGP/12	Guidance on Certain Physiological Characteristics	TGP/12/2 ADOPTED																			
TGP/13	Guidance for New Types and Species	TGP/13/1 ADOPTED																			
TGP/14	Glossary of Terms Used in UPOV Documents	TGP/14/2 ADOPTED																			
	Section 2.4: Apex/Tip Characteristics (Drafter: Office of the Union)					TWP/xx/23			TC-EDC/Jan15/24	TC/51/25	CAJ/71/7				TGP/14/3 Adopt						
TGP/15	Guidance on the Use of Biochemical and Molecular Markers in the Examination of Distinctness, Uniformity and Stability (DUS)	TGP/15/1 ADOPTED																			

[Appendix follows]

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ANNEX

APPENDIX: PROGRAM FOR THE REVISION OF DOCUMENT TGP/8

Title of document	2014						2015						2016						
	TC-EDC	TC/50	CAJ/69	TWPs	CAJ/70	C/48	TC-EDC	TC/51	CAJ/71	TWPs	CAJ/72	C/49	TC-EDC	TC/52	CAJ/73	TWPs	CAJ/74	C/50	
TGP/8 PART I: DUS TRIAL DESIGN AND DATA ANALYSIS																			
TC Approved Revisions (document TC/50/5 Annex II)		TC/50/5	CAJ/69/3			TGP/8/2 Adopt													
Minimizing variation due to different observers of the same trial (Drafter: Nik Hulse (Australia))	TC-EDC/Jan14/9	TC/50/21		TWP/xx/15			TC-EDC/Jan15/6	TC/51/16		TWP/xx/15			x	x	x				TGP/8/3 Adopt
TGP/8 PART II: TECHNIQUES USED IN DUS EXAMINATION																			
TC Approved Revisions (document TC50/5 Annex II)		TC/50/5	CAJ/69/3			TGP/8/2 Adopt													
Method of Calculation of COYU (Drafter: Adrian Roberts (United Kingdom))	TC-EDC/Jan14/10	TC/50/22		TWP/xx/16			TC-EDC/Jan15/7	TC/51/17		TWP/xx/16			x	x	x				TGP/8/3 Adopt
Examining DUS in Bulk Samples (Drafter: Office of the Union)	TC-EDC/Jan14/12	TC/50/24		TWP/xx/17			TC-EDC/Jan15/8	TC/51/18		TWP/xx/17			x	x	x				TGP/8/3 Adopt
Data Processing for the Assessment of Distinctness and for Producing Variety Descriptions (Drafter: Office of the Union)	TC-EDC/Jan14/13	TC/50/25		TWP/xx/18			TC-EDC/Jan15/9	TC/51/19		TWP/xx/18			x	x	x				TGP/8/3 Adopt
Guidance of Data Analysis for Blind-Randomized Trials (Drafter: Richard Brand (France))	TC-EDC/Jan14/14	TC/50/26		TWP/xx/19			TC-EDC/Jan15/10	TC/51/20											
Examining Characteristics Using Image Analysis (Drafter: Jean Maisson (European Union))	TC-EDC/Jan14/15	TC/50/27		TWP/xx/20			TC-EDC/Jan15/11	TC/51/21							x				TGP/8/3 Adopt
Statistical Methods for Visually Observed Characteristics (Drafter: TWG to identify)	TC-EDC/Jan14/16	TC/50/28		TWP/xx/21			TC-EDC/Jan15/12	TC/51/22											

[End of Annex and of document]