

Technical Committee**TC/54/11 Add.****Fifty-Fourth Session
Geneva, October 29 and 30, 2018****Original: English
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ADDENDUM TO MOLECULAR TECHNIQUES*Document prepared by the Office of the Union**Disclaimer: this document does not represent UPOV policies or guidance***EXECUTIVE SUMMARY**

1. The purpose of this addendum is to report on developments at the seventeenth session of the Working Group on Biochemical and Molecular Techniques, and DNA-Profiling in Particular (BMT).
2. The TC is invited to:
 - (a) consider whether to introduce paragraph 3.1.4 from document UPOV/INF/18/1 in document TGP/15 to clarify that it is the responsibility of the authority to decide on the reliability of the link between the gene and the expression of the characteristic, as set out in paragraph 8 of this document;
 - (b) consider whether to include the explanation in document TGP/15 that it would be the responsibility of the respective TWP and the TC to assess whether the reliability of the link between the gene and the expression of the characteristic was satisfied in order to include a method in the Test Guidelines, as set out in paragraph 8 of this document;
 - (c) request the European Union, France and the Netherlands to prepare a new draft of document UPOV/INF/17 for consideration at the eighteenth session of the BMT, as set out in paragraph 45 of this document;
 - (d) note that ISTA was not in a position to agree to the proposed joint activities with UPOV and OECD at the seventeenth session of the BMT, as set out in paragraph 49 of this document;
 - (e) consider whether UPOV and OECD should make progress on the matters previously agreed by the TC, as set out in paragraph 49 of this document;
 - (f) invite ISTA to join the initiatives, as set out in paragraph 49, when in a position to do so;
 - (g) note the offer from Mr. Barry Nelson (Corteva™ Agriscience) to explore the possibility to make a software tool for marker selection using the “traveling salesman” algorithm available to others for further development, as set out in paragraph 53 of this document;
 - (h) note that further developments would be reported to the BMT at its eighteenth session, as set out in paragraph 53 of this document;
 - (i) note that, at the seventeenth session of the BMT, discussion groups were formed for: maize and soybeans; other agricultural crops; fruit crops and forest trees; ornamental plants; and vegetables, for BMT participants to exchange information on their work and explore areas for cooperation, as set out in paragraph 57 of this document;
 - (j) note that the BMT plans to discuss, at its eighteenth session, issues concerning cooperation between partners and service providers, including confidentiality, access to data and material, authorization for work to be performed and availability of results and information to partners, as set out in paragraph 65 of this document;

(k) consider whether the results of the coordination session in the BMT be reported to the other Technical Working Parties (TWPs) and that the TWPs be invited to undertake a similar session to build on the BMT outcomes and feed into the future work of the BMT, as set out in paragraph 66 of this document; and

(l) consider the draft agenda for the BMT at its eighteenth session, as set out in paragraph 69.

3. The structure of this document is as follows:

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DEVELOPMENTS AT THE SEVENTEENTH SESSION OF THE WORKING GROUP ON BIOCHEMICAL AND MOLECULAR TECHNIQUES, AND DNA-PROFILING IN PARTICULAR

4. The seventeenth session of the BMT was held in Montevideo, Uruguay, from September 10 to 13, 2018. The specific day for the agenda items "The use of molecular techniques in examining essential derivation" and "The use of molecular techniques in variety identification" (the "Breeders' Day") was September 12, 2018.

Papers presented

5. The papers presented under each of the agenda items of the seventeenth session of the BMT were as follows:

Preparatory information

Preparatory Information (document BMT/17/4)

Reports on developments in UPOV concerning biochemical and molecular techniques

Reports on developments in UPOV (document BMT/17/2)

Short presentations on new developments in biochemical and molecular techniques by DUS experts, biochemical and molecular specialists, plant breeders and relevant international organizations

New developments in biochemical and molecular techniques CPVO report on IMODDUS: latest developments (document BMT/17/23)

New developments in biochemical and molecular techniques CPVO report on IMODDUS: Update on R&D projects co-funded by CPVO (document BMT/17/24)

Report of work on molecular techniques in relation to DUS examination

Test of the potential use of SNPs markers on oilseed rape varieties (document BMT/17/8)

Use of Molecular Marker Techniques in DUS Testing and Enforcement of Breeder's Right in the Republic of Korea (document BMT/17/14 Rev.)

Do resistance markers for tomato fulfil the requirements of TGP/15? (document BMT/17/21)

Use of SNP markers for soybean variety protection purposes in Argentina (document BMT/17/22)

The United States Molecular Marker Working Group: Background for the use of DNA markers in DUS (documents BMT/17/17 and BMT/17/17 Add.)

Use of DNA-Based Markers in Testing for Distinctness, Uniformity and Stability (DUS) and Enforcement of Plant Breeders Rights (PBR) (document BMT/17/20)

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

Revision of document TGP/15 "Guidance on the Use of Biochemical and Molecular Markers in the Examination of Distinctness, Uniformity and Stability (DUS)" (document BMT/17/7)

Guidance on the use of Biochemical and Molecular Markers in the examination of Distinctness, Uniformity and Stability (DUS) (document TGP/15/2 Draft 1)

Cooperation between international organizations

Cooperation between International Organizations (document BMT/17/3)

DNA-based methods for variety testing: ISTA approach (document BMT/17/6)

Variety description databases including databases containing molecular data

Construction of a European Potato database with varieties of common knowledge and its implementation in the potato DUS testing system

Part I: Construction, maintenance and use of the common database (document BMT/17/11)

Part II: Generation of molecular data (document BMT/17/12)

A DNA database for Rose: Development and validation of a SNP marker set (document BMT/17/15 and BMT/17/15 Add.)

Review of document UPOV/INF/17 "Guidelines for DNA-Profiling: Molecular Marker Selection and Database Construction ('BMT Guidelines')"

Review of document UPOV/INF/17 "Guidelines for DNA-Profiling: Molecular Marker Selection and Database Construction ('BMT Guidelines')" (documents BMT/17/10 and BMT/17/10 Add.)

Guidelines for DNA-Profiling: Molecular marker selection and database construction ("BMT Guidelines") (document UPOV/INF/17/2 Draft 1)

The use of molecular techniques in examining essential derivation¹

Do new breeding techniques lead to Essentially Derived Varieties? (documents BMT/17/9 and BMT/17/9 Add.)

The use of molecular techniques in variety identification¹

Implementation of SNP markers to identify soybean varieties commercialized in Uruguay (document BMT/17/13)

Corn Hybrid parental identification: The Use of Hybrid Monomorphic Profile compared to Pericarp Genotyping (document BMT/17/16)

Variety identification in soybeans using SNPs (document BMT/17/18)

Presentation of a set of 11 SNPs capable of discriminating 80 soybean varieties from a reference collection (document BMT/17/19)

¹ This agenda item was discussed on Wednesday, September 12, 2018 ("Breeders-Day").

Session to facilitate cooperation

*Session to facilitate cooperation in relation to the use of molecular techniques
(document BMT/17/5)*

Report of work on molecular techniques in relation to DUS examination

6. The BMT, at its seventeenth session, considered documents BMT/17/21 "*Do resistance markers for tomato fulfil the requirements of TGP/15*" and received a presentation by Ms. Amanda van Dijk-Veldhuizen (Netherlands), a copy of which would be provided as document BMT/17/21 Add. (see document BMT/17/25 "Report", paragraphs 10 and 12).

7. The BMT agreed that the method presented in document BMT/17/21 was consistent with the model "Characteristic-Specific Molecular Markers" in document TGP/15. The BMT agreed to propose that a new example be added to document TGP/15, on the basis of the example provided by the Netherlands, to illustrate a situation where the characteristic-specific marker did not provide complete information on the state of expression of a characteristic.

8. The BMT agreed to propose that paragraph 3.1.4 (reproduced below) from document UPOV/INF/18/1 be introduced in document TGP/15 to clarify that it was the responsibility of the authority to decide on the reliability of the link between the gene and the expression of the characteristic. When considering whether to include the method in the Test Guidelines, the BMT further proposed that TGP/15 include an explanation that it would be the responsibility of the respective TWP and the TC to assess whether the reliability of the link between the gene and the expression of the characteristic was satisfied.

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

9. *The TC is invited to consider:*

(a) *whether to introduce paragraph 3.1.4 from document UPOV/INF/18/1 in document TGP/15 to clarify that it is the responsibility of the authority to decide on the reliability of the link between the gene and the expression of the characteristic, as set out in paragraph 8 of this document; and*

(b) *whether to include the explanation in document TGP/15 that it would be the responsibility of the respective TWP and the TC to assess whether the reliability of the link between the gene and the expression of the characteristic was satisfied in order to include a method in the Test Guidelines, as set out in paragraph 8 of this document.*

Review of document UPOV/INF/17 "Guidelines for DNA-Profiling: Molecular Marker Selection and Database Construction ('BMT Guidelines')

10. The BMT, at its seventeenth session, considered documents BMT/17/10 and BMT/17/10 Add. "Review of document UPOV/INF/17 'Guidelines for DNA-profiling: Molecular Marker Selection and Database Construction ('BMT Guidelines')'" and UPOV/INF/17/2 Draft 1 "Guidelines for DNA-Profiling: Molecular marker selection and database construction ('BMT Guidelines')" (see document BMT/17/25 "Report", paragraphs 15 and 50).

Section A. Introduction

11. The BMT agreed to amend the first sentence of the text of the Introduction to read as follows:

“The purpose of this document (BMT Guidelines) is to provide guidance ~~on harmonized for developing harmonized methodologies principles for the use of DNA based markers~~ with the aim of generating high quality molecular data for a range of applications.”

Section B. General Principles

12. The BMT agreed to revise document UPOV/INF/17 on the basis of the joint comments from the European Union, France and the Netherlands.

Section 1. Selection of a Molecular Marker Methodology

13. The BMT agreed to delete Section 1.

Section 2. Selection of Molecular Markers

14. The BMT agreed to amend the title of Section 2 to read “1. Phase 1: Selection of Molecular Markers” and renumber the section accordingly.

Section 2.1 (a)

15. The BMT agreed that the text proposed by the European Union, France and the Netherlands should be abbreviated to refer only to the need to achieve a balance between the number of markers and the resolution or discriminative power according to the objective and taking into account the error-rate. It was agreed that the figure should be omitted.

Section 2.1 (c)

16. The BMT agreed to amend Section 2.1 (c) to read as follows:

“Coverage of the genome and the linkage should reflect the objectives. Knowing the position of the selected markers on the genome (i.e. map position) is not essential but enables the selection of markers that may be linked together to be avoided.”

New Section 1.1 (d)

17. The BMT agreed to add new Section 1.1 (d). The BMT also agreed that the European Union, France and the Netherlands should revise their proposal to list the possible sources without assessment of their suitability, because this would be influenced by the circumstances.

New Sections 1.1 (f) to (k)

18. The BMT agreed to add new Sections 1.1 (f) to (k) and to move new Section 1.1 (h) “Avoidance of linkage disequilibrium” next to new Section 1.1 (c).

Section 2.2 Criteria for specific types of molecular markers

19. The BMT agreed to delete the Section 2.2.

New Sections 1.2 and 1.3

20. The BMT agreed not to include new Sections 1.2 and 1.3 proposed by the European Union, France and the Netherlands.

New Section 2

21. The BMT agreed to add a new Section 2 “Phase 2: Selection of the Detection Method” without the following text “As a prerequisite, whatever the source of material, the method for sampling and DNA extraction should be standardized and documented”.

New Section 2.1

22. The BMT agreed to add a new Section 2.1 “Genotyping methods - general criteria” with the following subsection 2.1.1. With regards to the subsection 2.1.1, the BMT agreed to avoid classifying the criteria as “Mandatory criteria” or “Optional criteria” and to delete “(e) Applicable for both diploid species and polyploidy species”. The BMT also agreed to include a new item “sustainability of databases” to subsection 2.1.1. The BMT agreed not to include a new subsection 2.1.2, concerning improvements in technology.

New Section 2.2

23. The BMT agreed that the European Union, France and the Netherlands should combine the proposed elements in new Section 2.1.

Section 3. Access to the Technology

24. The BMT agreed to renumber Section 3 to Section 2.3.

New Section 2.4

25. The BMT agreed that the European Union, France and the Netherlands should shorten the proposed text and present it in a preamble at the beginning of the document.

Section 4. Material to be Analyzed

26. The BMT agreed to move current texts and subsections in Section 4 to a new Section 5.2 “Requirements of the plant material”.

Section 4.4

27. The BMT agreed with the text proposed by the European Union, France and the Netherlands in Section 4.4, except that the third sentence should be replaced by a reference to document TGP/5: Section 1 concerning transfer of material.

Section 5. Standardization of Analytical Protocols

28. The BMT agreed to delete current Section 5 and replace with a new Section 4 “Phase 4: Harmonization and Validation of the Marker Set and Method”.

Section 5.1

29. The BMT agreed to delete current Section 5.1 and replace with a new Section 4.1 “Harmonisation and validation – general criteria”. The BMT also agreed that the European Union, France and the Netherlands should revise proposed texts under the new Section 4.1 to clarify that usage of validated methods will lead to harmonized results.

Section 5.2

30. The BMT agreed to delete current Section 5.2 and replace with a new Section 4.2 “Performance criteria”. With regards to the proposed texts under the new Section 4.1, the BMT agreed to list the criteria without the additional explanatory information.

Section 5.3

31. The BMT agreed to delete current Section 5.3 and replace with a new Section 3 “Phase 3: Evaluation of the Selected Marker Set and Detection Method (fit for purpose validation of the marker set and technological validation of the method)”. With regards to the proposed subsection 3.1.1 under the new Section 3, the BMT agreed that the European Union, France and the Netherlands should revise the texts in order to explain the need to use a suitable set of varieties to develop marker sets and a further set of varieties to evaluate the marker set. With regards to the proposed subsection 3.1.2, the BMT agreed that the European Union, France and the Netherlands should review the text.

New Section 4.3

32. The BMT agreed to add a new section 4.3 “Consistence criteria - harmonization of markers and methods in different laboratories Performance criteria”. The BMT also agreed that the European Union, France and the Netherlands should review this new section in order to avoid duplication with previous sections.

Section 6. Databases

33. The BMT agreed to introduce a new Section 6. “Data exchange” after Section 5 “Databases”. With regards to the texts proposed by the European Union, France and the Netherlands, the BMT agreed that the European Union, France and the Netherlands should remove the wording “shared databases” from their revised proposal on databases and should provide the full names for “VCF” and “BCF” in the list of acronyms.

New Section 5.3

34. The BMT agreed that the European Union, France and the Netherlands should avoid a recommendation for “open-source tools” in Section 5.3 (d), replace the word “cultivar” with “variety” and provide the meaning of “bam” and “CRAM” in the list of acronyms.

Section 6.1

35. The BMT agreed to renumber Section 6.1. as new Section 5.4. With the proposed text, the BMT agreed that the European Union, France and the Netherlands should delete the link to the standard and review whether it should be indicated as a preferred method.

Section 6.2

36. The BMT agreed to renumber Section 6.2. as Section 5.5 and to add the following sentences to the end of the current texts “For variants obtained from sequencing data, storing VCF files in a relational or no SQL database is recommended. In this case, each database record for a variant has a defined genome version, chromosome, position, reference allele”.

Section 6.3

37. The BMT agreed to renumber Section 6.3. as Section 5.6.

Section 6.3.1 (b)

38. The BMT agreed to amend the title of Section 6.3.1 (b) to read “Reference genome position / Locus code:” with the following texts “Preferably, a genome assembly version, chromosome and position should be provided if a reference genome is available for the species concerned, e.g. SL2.50ch05:63309763 for tomato *Solanum lycopersicum* assembly version 2.50 on chromosome 5 position 63309763. If no reference genome is available or the location is unknown, a name or code of the locus for the species concerned can be used, e.g. gwm 149, A2, etc.”

Section 6.3.1 (c)

39. The BMT agreed to amend the title of Section 6.3.1 (c) to read "Genotype" with the following texts "For SNP genotypes, the allele composition of the SNP or MNP should be given, e.g. A/T or A/A. For other techniques, genotype indicates the name or code of the allele of a given locus for the species concerned, e.g. 1, 123, etc." The BMT agreed that the European Union, France and the Netherlands should provide the meaning of "MNP" in the list of acronyms.

Section 6.3.1 (d)

40. The BMT agreed to amend the title of Section (d) to read "Allele depths / Data value:" with the following texts "For SNPs obtained from next generation sequencing data this should indicate the depth of coverage for alleles e.g. 10/20 for an A/T allele in which the A is covered by 10 reads and the T by 20. Otherwise, indicates a data value for a given sample on a given locus-allele, e.g. 0 (absence), 1 (presence), 0.25 (frequency) etc."

New section 6. "Phase 4: Database Management"

41. The BMT agreed not to include the proposal to add the new Section 6.

Section 7. Summary

42. The BMT agreed that the summary would need to be revised in accordance with the changes to the structure and content of the document.

New section C "DEFINITIONS"

43. The BMT agreed not to add a new section C "DEFINITIONS".

GLOSSARY

44. The BMT agreed that the glossary should become a list of acronyms providing the meanings of abbreviations but should not provide explanations of any terms.

45. The BMT agreed to propose to the TC that the European Union, France, Netherlands to prepare a new draft of INF/17 for consideration of the eighteenth session of the BMT.

46. The TC is invited to request the European Union, France and the Netherlands to prepare a new draft of document UPOV/INF/17 for consideration at the eighteenth session of the BMT, as set out in paragraph 45 of this document.

Cooperation between international organizations

47. The background to this matter is provided in document TC/54/11 "Molecular Techniques", paragraphs 19 to 23.

48. The BMT, at its seventeenth session, considered document BMT/17/3 "Cooperation between International Organizations" (see document BMT/17/25 "Report", paragraphs 54 and 55).

49. The BMT noted that ISTA was not in a position to agree to the proposed joint activities with UPOV and OECD at that time and agreed to propose to the TC that UPOV and OECD should make progress on the matters previously agreed by the TC, namely:

(a) to develop a joint document explaining the principal features of the systems of the OECD, UPOV and ISTA;

(b) 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”, subject to the approval of the Council and in coordination with OECD and ISTA; and

(c) the proposal for the BMT, at its fifteenth session, to develop lists of possible joint initiatives with OECD and ISTA in relation to molecular techniques for consideration by the TC to be presented at the TC, at its fifty-third session.

50. The BMT agreed that ISTA should be welcomed to join the above initiatives as and when it was in a position to do so.

51. *The TC is invited to:*

(a) *note that ISTA was not in a position to agree to the proposed joint activities with UPOV and OECD at the seventeenth session of the BMT, as set out in paragraph 49 of this document;*

(b) *consider whether UPOV and OECD should make progress on the matters previously agreed by the TC, as set out in paragraph 49 of this document; and*

(c) *invite ISTA to join the initiatives, as set out in paragraph 49, when in a position to do so.*

The use of molecular techniques in variety identification

52. The BMT, at its seventeenth session, considered document BMT/17/18 “Variety identification in soybeans using SNPs” and received a presentation by Mr. Barry K. Nelson (Corteva™ Agriscience), a copy of which would be provided as document BMT/17/18 Add. (see document BMT/17/25 “Report”, paragraphs 65 and 66).

53. The BMT welcomed the offer from Mr. Nelson (Corteva™ Agriscience) to explore the possibility to make a software tool for marker selection using the traveling salesman algorithm available to others for further development. It was agreed that any experts wishing to explore that with Mr. Nelson would contact him directly and that he would be invited to report on developments to the BMT at its eighteenth session.

54. *The TC is invited to:*

(a) *note the offer from Mr. Barry Nelson (Corteva™ Agriscience) to explore the possibility to make a software tool for marker selection using the “traveling salesman” algorithm available to others for further development, as set out in paragraph 53 of this document; and*

(b) *note that further developments would be reported to the BMT at its eighteenth session, as set out in paragraph 53 of this document.*

Session to facilitate cooperation

55. The background to this matter is provided in document TC/54/11 “Molecular Techniques”, paragraphs 25 to 30.

56. The BMT considered document BMT/17/5 “Session to facilitate cooperation in relation to the use of molecular techniques”.

57. Discussion groups were formed for: maize and soybeans; other agricultural crops; fruit crops and forest trees; ornamental plants; and vegetables, for BMT participants to exchange information on their work and explore areas for cooperation.

58. The BMT was informed of the following outcomes of the discussions:

Maize and Soybean

Summary of crop interest

Maize	United States of America
Soybean	Argentina, Brazil, Canada, United States of America, CropLife

Plans for cooperation

- Argentina to consult whether the selected subset of markers from the 6K Illumina chip could be shared with Brazil and United States of America. In case possible, United States of America would test the discriminating power of the subset on a different variety collection. Argentina and United States of America would also consider establishing a common subset of markers suitable for different technologies (e.g. Genotyping by Sequencing).
- United States of America breeders to coordinate with Brazilian breeders to formulate a proposal to be presented to the Brazilian Plant Variety Protection Office (SNPC) for a study on the use of molecular markers in DUS examination for soybeans (e.g. similar to the study conducted in Argentina).
- CropLife to collaborate with the initiative from the United States of America for the establishment of marker sets and methods to support DUS examination.

Proposals for UPOV initiatives

59. The coordination group on maize and soybeans agreed that the UPOV Office should follow up with participants on the possible test of discriminating power of the subset of molecular markers selected by Argentina and the possible establishment of a common subset of markers suitable for different technologies.

Other agricultural crops

Summary of crop interest

Barley	Canada, Czech Republic, France, Germany, United Kingdom
Cotton	Brazil
Durum wheat	Italy, European Union
Hemp	Netherlands
Lucerne	France
Oats	Canada
Oilseed Rape	Canada, France, Germany, United Kingdom, Corteva
Potato	Canada, European Union, Finland, Germany, Netherlands, United Kingdom
Rice	Japan, Republic of Korea
Ryegrass	Belgium, Netherlands, United Kingdom
Sorghum	France
Sunflower	France
Wheat	Canada, Czech Republic, Estonia, France, Italy, United Kingdom, Corteva

Plans for cooperation

- Potato: Canada and the Republic of Korea to approach the partners in the European Potato Database to discuss their possible involvement in the database.
- Rice: Japan and the Republic of Korea to discuss cooperation between China, Japan and the Republic of Korea in the East Asia Plant Variety Protection Forum.
- Ryegrass: Belgium, Czech Republic and the Netherlands to share information on their work and plans.

Proposals for UPOV initiatives

60. The coordination group on other agricultural crops agreed that it would be useful to introduce an item at the eighteenth session of the BMT for participants to provide information on how they managed cooperation

between partners and service providers, including confidentiality, access to data and material, authorization for work to be performed and availability of results and information to partners.

Vegetables

Summary of crop interest

Cabbage	Republic of Korea
Chinese cabbage	China, Republic of Korea
Cucumber	Netherlands, Republic of Korea, BASF
Eggplant	Italy
French bean	Netherlands
Lettuce	Australia, Canada, Netherlands, Republic of Korea, BASF, Croplife International, Sakata Seed Sudamerica
Melon	China, Netherlands, Republic of Korea, BASF, Sakata Seed Sudamerica
Onion	Italy, Netherlands, BASF
Oriental melon	Republic of Korea
Pea	Netherlands, United Kingdom
Pepper	China, Italy, Netherlands, Republic of Korea, BASF, Croplife International, Sakata Seed Sudamerica
Pumpkin	Republic of Korea, Sakata Seed Sudamerica
Radish	Republic of Korea, BASF
Shallot	Netherlands
Squash	Italy, Sakata Seed Sudamerica
Tomato	China, Italy, Netherlands, Republic of Korea, BASF, Croplife International, Sakata Seed Sudamerica
Water melon	China, Italy, Republic of Korea, BASF, Croplife International

Proposals for UPOV initiatives

61. The coordination group on vegetable crops agreed that it would be useful to introduce an item at the BMT, inviting breeders, lawyers and policy makers to discuss ownership matters, and establish criteria to make possible for exchanging materials and DNA information among UPOV members.

Fruit crops and forest trees

Summary of crop interest

Apple	Canada, European Union, France, Netherlands, Republic of Korea, CIOFORA
Apricot	France
Blueberry	Netherlands, Republic of Korea, United Kingdom
Cherry	France
Citrus	CIOFORA
Elm (Ulmus)	Netherlands
<i>Fraxinus</i>	Netherlands
Japanese Plum	France
Peach	France, Republic of Korea
Pear	France
Raspberry	Netherlands, United Kingdom
Strawberry	China, France, Netherlands

Proposals for UPOV initiatives

62. The coordination group on fruit crops and forest trees agreed the importance of ownership matters in order to facilitate international cooperation in relation to the use of molecular techniques.

Ornamental plants

Summary of crop interest

Chrysanthemum	Netherlands
<i>Gypsophila</i>	Netherlands
Helleborus	Netherlands
Hydrangea	France

<i>Lilium</i>	Netherlands
Phalaenopsis	Netherlands
Rose	China, Netherlands, CIOFORA
Tree Peony	China

Plans for cooperation

- Rose: After finalizing cooperation between the Netherlands and CIOFORA, China could explore the possibility to cooperate on validating between labs.

Proposals for UPOV initiatives

63. The coordination group on ornamental plants, at its second round, agreed that it would be useful to organize sessions to share experiences on how to overcome the ownership matters in order to facilitate international cooperation in relation to the use of molecular techniques.

64. The coordination group on ornamental plants agreed that it would be useful to establish common databases to facilitate international cooperation in relation to the use of molecular techniques.

65. Taking into account the reports of the cooperation sessions, the BMT noted the common interest to address issues concerning cooperation between partners and service providers, including confidentiality, access to data and material, authorization for work to be performed and availability of results and information to partners and agreed to add this as an agenda item for its eighteenth session in order for experts, including breeders, to present information on their experiences (see proposed agenda item 8 "Management of databases and exchange of data and material" for the eighteenth session of the BMT).

66. The BMT agreed to propose to the TC that the results of the coordination session in the BMT be reported to the other Technical Working Parties (TWPs) and that the TWPs be invited to undertake a similar session to build on the BMT outcomes and feed into the future work of the BMT. The BMT agreed that the information on crop interest by participants at the sixteenth session of the BMT should be added to the above in the document to be prepared for the TWPs and the eighteenth session of the BMT.

67. *The TC is invited to:*

(a) note that, at the seventeenth session of the BMT, discussion groups were formed for: maize and soybeans; other agricultural crops; fruit crops and forest trees; ornamental plants; and vegetables, for BMT participants to exchange information on their work and explore areas for cooperation, as set out in paragraph 57 of this document;

(b) note that the BMT plans to discuss, at its eighteenth session, issues concerning cooperation between partners and service providers, including confidentiality, access to data and material, authorization for work to be performed and availability of results and information to partners, as set out in paragraph 65 of this document; and

(c) consider whether the results of the coordination session in the BMT be reported to the other Technical Working Parties (TWPs) and that the TWPs be invited to undertake a similar session to build on the BMT outcomes and feed into the future work of the BMT, as set out in paragraph 66 of this document.

Future program

Date and place of next session

68. The BMT welcomed the invitation of China to hold its eighteenth session in Hangzhou, China, from October 16 to 18, 2019, back-to-back with the TWC session in order to facilitate the discussions on areas of mutual interests, with the elements of the preparatory workshop included in the session (see document BMT/17/25 "Report", paragraph 79).

Program for the eighteenth session

69. During its eighteenth session, the BMT planned to discuss the following items (see document BMT/17/25, paragraph 80):

1. Opening of the session
2. Adoption of the agenda
3. Reports on developments in UPOV concerning biochemical and molecular techniques (document to be prepared by the Office of the Union)
4. Short presentations on new developments in biochemical and molecular techniques by DUS experts, biochemical and molecular specialists, plant breeders and relevant international organizations (oral reports by participants)
5. Report of work on molecular techniques in relation to DUS examination (papers invited)
6. Cooperation between international organizations (document to be prepared by the Office of the Union)
7. Variety description databases including databases containing molecular data (papers invited)
8. Management of databases and exchange of data and material² (papers invited)
9. Methods for analysis of molecular data (papers invited)
10. Report on developments of a software tool for marker selection using the traveling salesman algorithm
11. The use of molecular techniques in examining essential derivation² (papers invited)
12. The use of molecular techniques in variety identification² (papers invited)
13. Review of document UPOV/INF/17 "Guidelines for DNA-Profiling: Molecular Marker Selection and Database Construction"
14. Revision of document TGP/15 "Guidance on the Use of Biochemical and Molecular Markers in the Examination of Distinctness, Uniformity and Stability (DUS)"
15. Session to facilitate cooperation
16. Date and place of next session
17. Future program
18. Report of the session (if time permits)
19. Closing of the session

70. The TC is invited to consider the draft agenda for the BMT at its eighteenth session, as set out in paragraph 69.

² Breeders' Day