

Technical Committee

TC/57/8 Add.

**Fifty-Seventh Session
Geneva, October 25 and 26, 2021**

Original: English
Date: October 8, 2021

**ADDENDUM TO
MOLECULAR TECHNIQUES**

Document prepared by the Office of the Union

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EXECUTIVE SUMMARY

1. The purpose of this addendum is to report developments at the 2021 sessions of the Technical Working Parties (TWPs) and the Working Group on Biochemical and Molecular Techniques and DNA-Profiling in Particular (BMT) concerning: (1) cooperation between international organizations; and (2) sessions to facilitate cooperation in relation to the use of molecular techniques.

2. The TC is invited to:

(a) consider the following possible topics for a future joint UPOV/OECD/ISTA workshop:

- (i) providing information on the use of molecular techniques in each organization;
- (ii) procedure for approval of biochemical and molecular methods in each organization; and
- (iii) possibilities for harmonizing methods between UPOV, OECD and ISTA.

(b) consider whether to continue the survey on the use of molecular markers to obtain information from a greater number of UPOV members; and

(c) investigate the reasons for members of the Union not responding to the first survey.

3. The structure of this document is as follows:

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Annex: Survey of participants at the twentieth session of the BMT on cooperation with OECD and ISTA

4. The following abbreviations are used in this document:

BMT:	Working Group on Biochemical and Molecular Techniques, and DNA-Profiling in Particular
ISTA:	International Seed Testing Association
OECD:	Organization for Economic Co-operation and Development
TC:	Technical Committee
TWA:	Technical Working Party for Agricultural Crops
TWC:	Technical Working Party on Automation and Computer Programs

TWF:	Technical Working Party on Fruit Crops
TWM:	Technical Working Party on Testing Methods and Techniques
TWO:	Technical Working Party on Ornamental Plants and Forest Trees
TWPs:	Technical Working Parties
TWV:	Technical Working Party for Vegetables

COOPERATION BETWEEN INTERNATIONAL ORGANIZATIONS

5. At their sessions in 2021, the TWV¹, TWO², TWA³, TWF⁴ and TWC⁵ considered document TWP/5/7 “Molecular Techniques” (see documents TWV/55/16 “Report”, paragraphs 51 to 55; TWO/53/10 “Report”, paragraphs 59 to 61; TWA/50/9 “Report”, paragraphs 88 to 90; TWF/52/10 “Report”, paragraphs 13 to 15; and TWC/39/9 “Report”, paragraphs 72 to 76).

6. The BMT, at its twentieth session⁶, considered document BMT/20/4 “Cooperation between international organizations” (see document BMT/20/12 “Report”, paragraphs 13 to 24).

Lists of possible joint initiatives with OECD and ISTA in relation to molecular techniques

7. The TWPs and BMT noted that the TC, at its fifty-sixth session, had agreed that another joint OECD, UPOV, ISTA workshop on molecular techniques should be organized in the near future.

8. The TWPs and BMT noted that the TC had agreed that a joint OECD, UPOV, ISTA workshop on molecular techniques would be an opportunity to discuss the definitions used in molecular techniques with a view to their harmonization.

9. The BMT noted that a poll had been conducted during its twentieth session to assess the following information from participants:

- What are the areas of common interest between UPOV, OECD and ISTA on the use of BMT?
- What would be suitable topics for a joint UPOV/OECD/ISTA workshop on BMT?

10. The BMT considered the responses to the poll, as reproduced in Annex II to this document, and agreed to propose the following possible topics for a future joint UPOV/OECD/ISTA workshop:

- providing information on the use of molecular techniques in each organization;
- procedure for approval of biochemical and molecular methods in each organization; and
- possibilities for harmonizing methods between UPOV, OECD and ISTA.

11. The TC is invited to consider the following possible topics for a future joint UPOV/OECD/ISTA workshop:

- (i) providing information on the use of molecular techniques in each organization;*
- (ii) procedure for approval of biochemical and molecular methods in each organization; and*
- (iii) possibilities for harmonizing methods between UPOV, OECD and ISTA.*

¹ at its fifty-fifth session, hosted by Turkey and held via electronic means, from May 3 to 7, 2021

² at its fifty-third session, hosted by the Netherlands and held via electronic means, from June 7 to 11, 2021

³ at its fiftieth session, hosted by the United Republic of Tanzania and held via electronic means, from June 21 to 25, 2021

⁴ at its fifty-second session, hosted by China and held via electronic means, from July 12 to 16, 2021

⁵ at its thirty-ninth session, hosted by the United States of America and held via electronic means, from September 20 to 22, 2021

⁶ hosted by the United States of America and held via electronic means, from September 22 to 24, 2021

Joint document explaining the principal features of the systems of OECD, UPOV and ISTA

12. The TWPs and BMT noted that a draft joint document explaining the principal features of the systems of OECD, UPOV and ISTA would be presented for consideration by the TC at its fifty-seventh session.

13. The BMT, at its twentieth session, noted that, subject to approval by the TC of the draft joint document, the TC would be invited to request the Office of the Union to inform OECD and ISTA accordingly.

Inventory on the use of molecular marker techniques, by crop

14. The TWPs and BMT noted that, on October 16, 2020, the Office of the Union had issued Circular E-20/189, inviting members to complete the survey on the use of molecular marker techniques, by December 15, 2020.

15. The TWPs and BMT noted that the results of the survey would be presented to the Technical Committee, at its fifty-seventh session, to be held in 2021.

16. The BMT, at its twentieth session, noted that the Technical Committee (TC), at its fifty-seventh session, would be invited to request the Office of the Union to inform OECD of the result of the survey and report developments to the TC, at its fifty-eighth session.

International Seed Testing Association

17. The BMT, at its twentieth session, received a presentation from Ms. Ana Laura Vicario (International Seed Testing Association (ISTA)) on "ISTA report on biochemical and molecular techniques", a copy of which is reproduced in document BMT/20/11.

18. The BMT agreed that it was useful to learn about the progress in ISTA validation methods, as reported in the presentation.

Organisation for Economic Co-operation and Development

19. The BMT, at its twentieth session, received a presentation from Mr. Csaba Gaspar (Organisation for Economic Co-operation and Development (OECD)) on "Current status of BMT under the OECD Seed Schemes", a copy of which is reproduced in document BMT/20/10.

20. The BMT noted the expression of interest by OECD to continue collaborating with UPOV on matters relating to the use of molecular markers in the organizations and agreed that the joint initiatives should be continued.

SESSION TO FACILITATE COOPERATION IN RELATION TO THE USE OF MOLECULAR TECHNIQUESTechnical Working Parties (TWPs)

21. The TWPs, at their sessions in 2021, noted the information provided by participants at the nineteenth session of the BMT on their work on biochemical and molecular techniques and areas for cooperation, as reproduced in Annex I to document TWP/5/7 see documents TWV/55/16 "Report", paragraphs 48 and 49; TWO/53/10 "Report", paragraph 57; TWA/50/9 "Report", paragraphs 85 and 86; TWF/52/10 "Report", paragraphs 10 and 11; and TWC/39/9 "Report", paragraph 70).

22. The TWV, at its fifty-fifth session, formed a discussion group to allow participants to exchange information on their work on biochemical and molecular techniques and explore areas for cooperation. Tomato, lettuce and pepper were discussed during the discussion group.

23. The TWA, at its fiftieth session, held a discussion session to allow participants to exchange information on their work on biochemical and molecular techniques and explore possible areas for cooperation for Soybeans, Potato, Oilseed Rape, Hemp, Faba Bean and Wheat. The TWA agreed to invite presentations to

be made at its fifty-first session, to be held in 2022, on biochemical and molecular techniques in the different crops discussed.

24. The TWF, at its fifty-third session, held a discussion session to allow participants to exchange information on their work on biochemical and molecular techniques and explore areas for cooperation for Apple, Strawberry and Peach. The TWF agreed to invite the experts from the European Union and France to make presentations on the use of molecular techniques in DUS examination of apple varieties, at its fifty-third session.

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

25. The BMT, at its twentieth session, considered document BMT/20/6 "Session to facilitate cooperation" (see document BMT/20/12 "Report", paragraphs 28 to 35).

26. The BMT recalled the information provided by participants at the nineteenth session of the BMT on their work on biochemical and molecular techniques and areas for cooperation, as reproduced in the Annex to document BMT/20/6.

27. The BMT noted the information on the discussion groups that had been formed at the Technical Working Parties, at their sessions in 2021, to allow participants to exchange information on their work on biochemical and molecular techniques and explore areas for cooperation.

28. The BMT held a discussion session to allow participants to exchange information on their work on biochemical and molecular techniques and explore possible areas for cooperation.

29. The BMT considered whether UPOV could support harmonization and cooperation between members already using molecular markers in DUS examination or making information or BMT services available to other UPOV members.

30. The BMT agreed that information on the use of molecular markers by crop was important to promote cooperation between UPOV members and agreed to propose that the survey on the use of molecular markers was continued to obtain information from a greater number of UPOV members.

31. The BMT agreed that it would be useful to confirm the reasons for not responding to the first survey.

32. The BMT agreed that the possibility to form discussion groups during the sessions should be maintained.

33. *The TC is invited to:*

(a) consider whether to continue the survey on the use of molecular markers to obtain information from a greater number of UPOV members; and

(b) investigate the reasons for members of the Union not responding to the first survey.

[Annex follows]

ANNEX

SURVEY OF PARTICIPANTS AT THE TWENTIETH SESSION OF THE BMT ON COOPERATION WITH
OECD AND ISTA

What are the areas of common interest between UPOV, OECD and ISTA on the use of BMT?

- Seed purity/uniformity
- Harmonization of SNP marker sets in specific crops for identification purposes
- variety verification tools
- Identifying off-types/impurities. Identifying and describing a variety.
- Harmonization of molecular markers.
- To have sets of validated markers to be used for the purpose of each organization. Discuss how to work together to take advantage of each organization potential.
- guidance on how to validate an alternative method against a reference method ; variety identity
- standards for Uniformity, variation thresholds, use of MM to support uniformity (lessen impact of environmental influence or variable expertise/training for data collectors)
- Variety identity
- new variety of plants
- Agreement, harmonization of definitions. Knowledge sharing and creating common database of used methods for various purposes in the member countries
- The use DNA markers for DUS of grain and oil crops
- Use of validated methods for the identification of varieties
- variety identification
- There might be an interest for UPOV and OECD to apply comparable marker sets for identity issues.
- The effectiveness of the use of DNA technology is in identifying the variety
- Variety verification, Description, and also PBR
- Cooperation, information sharing
- technology
- list of agreed markers and procedures to identify a variety
- DNA variety identification
- Enforcing PVP in connection with seed certification, developing identification methods for protected varieties.
- variety identification
- recognition of methods; joint research effort

What would be suitable topics for a joint UPOV/OECD/ISTA workshop on BMT?

- The use of Markers for variety identification
- how to harmonize methods and test for consistency
- Applied methods, current hot topics and future work.
- Study on relationship between molecular markers and DUS characteristics.
- Validation scheme of ISTA, UPOV use of molecular markers, OECD use of molecular markers. Discussion on which are the best molecular markers for different crops and uses.
- new technologies and potential uses
- Standards for Uniformity determination, variation thresholds
- identity - distinctness - methods
- the rules regarding seed propagation and processing are prescribed by the OECD
- Limitations and potentials of using molecular markers for seed testing, varietal certification and PVP purposes. Common areas of concerns and ways for further developments
- Type of DNA markers for different crops
- Comparison between systems and activities involving BMT, possible areas of harmonization, ways of developing cooperation and exchange of information
- clarify the positions of the various associations regarding the use of molecular markers, evaluate available methodologies, make practical examples of their use by seed certification and examination office. How to harmonize these methodologies among offices to obtain comparable results?
- Common markers database per specie / validation and recognition of current techniques and protocols / Thresholds / private sector initiatives already in place with markers
- development
- harmonization of suitable markers and procedures for the DNA profile of varieties so that the profiles could be exchanged or compiled in databases of common use

- Scenes where DNA variety identification is required
- variety identification
- respective strategy on the use of BMT; organization of BMT expertise; method validate

[End of Annex and of document]